

Statement of Basis

**Permit to Construct No. P-2017.0055
Project ID 61952**

**Rule Steel
Caldwell, Idaho**

Facility ID 027-00156

Final

December 10, 2018

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Permit Writer**



The purpose of this Statement of Basis is to satisfy the requirements of IDAPA 58.01.01. et seq, Rules for the Control of Air Pollution in Idaho, for issuing air permits.

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ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

AAC	acceptable ambient concentrations
AACC	acceptable ambient concentrations for carcinogens
acfm	actual cubic feet per minute
BMP	best management practices
Btu	British thermal units
CAA	Clean Air Act
CAS No.	Chemical Abstracts Service registry number
cfm	cubic feet per minute
CFR	Code of Federal Regulations
CMS	continuous monitoring systems
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	CO ₂ equivalent emissions
DEQ	Department of Environmental Quality
dscf	dry standard cubic feet
EL	screening emission levels
EPA	U.S. Environmental Protection Agency
GACT	Generally Available Control Technology
GHG	greenhouse gases
GP	General Provisions
gph	gallons per hour
gpm	gallons per minute
HAP	hazardous air pollutants
hp	horsepower
hr/yr	hours per consecutive 12 calendar month period
HVLP	high-volume, low-pressure spray gun
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
km	kilometers
lb/hr	pounds per hour
LPG	Liquified Petroleum Gas
m	meters
MMBtu	million British thermal units
MMscf	million standard cubic feet
NAAQS	National Ambient Air Quality Standard
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
NSPS	New Source Performance Standards
O&M	operation and maintenance
Fl Oz	Fluid ounce
O ₂	oxygen
PAH	polyaromatic hydrocarbons
PC	permit condition
PM	particulate matter
PM _{2.5}	particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers
PM ₁₀	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
POM	polycyclic organic matter
ppm	parts per million
ppmw	parts per million by weight
PSD	Prevention of Significant Deterioration

PTC	permit to construct
PTE	potential to emit
PW	process weight rate
<i>Rules</i>	<i>Rules for the Control of Air Pollution in Idaho</i>
scf	standard cubic feet
SIP	State Implementation Plan
SM	synthetic minor
SM80	synthetic minor facility with emissions greater than or equal to 80% of a major source threshold
SO ₂	sulfur dioxide
SO _x	sulfur oxides
T/day	tons per calendar day
T/hr	tons per hour
T/yr	tons per consecutive 12 calendar month period
TAP	toxic air pollutants
ULSD	ultra-low sulfur diesel
VOC	volatile organic compounds

FACILITY INFORMATION

Description

Rule Steel operates an existing steel fabrication and manufacturing facility which is located on Bass Lane in Caldwell, ID. At this facility, various forms of raw materials are received including steel (primarily carbon steel and smaller amounts of stainless steel), ancillary parts, electrical components, paints, thinners, welding electrodes, welding gases, and support chemicals (such as solvents, oils, and lubricants). These raw materials are machined into industrial grinders, light gauge storage boxes, and containers, and structural steel tanks, dumpsters, storage bins, and structural steel components. Facility operations include two plasma cutters, abrasive blasting, welding, two paint booths, and nine portable space heaters. The plasma cutting operations emissions were calculated based on use of indoor recirculating air filtration units which are being installed in the Plasma Cutting Shop.

Rules steel is consolidating operations from their nearby shops near Middleton Road in Caldwell to this main facility on Bass Lane. The Bass Lane facility will include the following structures:

Plant 1 (Diamond Z Shop): contains stations for machining, welding, and cutting steel associated with industrial grinders.

Plant 2 (Plasma Cutting Shop): contains two plasma cutters.

Plant 3 (Structural Shop): contains welding, cutting, and grinding stations for fabricating structural steel.

Plant 4 (Handrail Shop): welding and cutting for fabricating handrails.

Outdoor Tent (Quonset Hut Structure): previously used to control emissions from primer application to structural steel

Abrasive Blasting Area: partially enclosed area for abrasive blasting.

Container Shop: to be used to fabricate various containers (seed bins, trash containers, etc.)

Tank Shop: will be used to fabricate various storage tanks.

Paint Booths: Two paint booths will be installed to control emissions from painting products manufactured/fabricated at the facility. One of the booths will be relocated from Rule Steel operations near Middleton Road.

Permitting History

This is the initial PTC for an existing facility that was previously constructed, thus there is no permitting history.

Application Scope

This permit is the initial PTC for this facility. The applicant has applied for a permit for their steel fabrication and manufacturing facility.

Application Chronology

August 5, 2017	DEQ sent a notice of violation to the facility, which included notification that a PTC was required (Enforcement Case No. E-2017.0015).
October 31, 2017	DEQ received an application and an application fee.
November 06 – November 21, 2017	DEQ provided an opportunity to request a public comment period on the application and proposed permitting action.
December 1, 2017	DEQ determined that the application was incomplete.
June 19, 2018	DEQ received supplemental information from the applicant.
July 6, 2018	DEQ determined that the application was complete.

August 7, 2018	DEQ made available the draft permit and statement of basis for peer and regional office review.
August 10, 2018	DEQ made available the draft permit and statement of basis for applicant review.
October 23 – November 22, 2018	DEQ provided a public comment period on the proposed action.
September 28, 2018	DEQ received the permit processing fee.
December 10, 2018	DEQ issued the final permit and statement of basis.

TECHNICAL ANALYSIS

Emissions Units and Control Equipment

Table 1 EMISSIONS UNIT AND CONTROL EQUIPMENT INFORMATION

Source ID No.	Sources	Control Equipment	Emission Point ID No.
1	<u>Plasma Cutter #1:</u> Manufacturer: Hypertherm Model: HPR400XD Handheld/Table: Table Manufacture Date: 2017	<u>Water Table:</u> Manufacturer: Hypertherm Model: HPR400XD Semidry/Wet: Wet PM ₁₀ control efficiency: 99.0% <u>Air Filtering System:</u> Manufacturer: AZTech Model: T6000-S Prefilter: 4" Pleated, MERV-11 Filter: Bag Filter, MERV-15 PM ₁₀ control efficiency: 99.0%	<u>Plasma Cutting Shop Doors</u> PLASMASHOP1 PLASMASHOP2 PLASMASHOP3 PLASMASHOP4 PLASMASHOP5 PLASMASHOP6 PLASMASHOP7 PLASMASHOP8
	<u>Plasma Cutter #2:</u> Manufacturer: Hypertherm Model: HPR400XD Handheld/Table: Table Manufacture Date: 2017	<u>Water Table:</u> Manufacturer: Hypertherm Model: HPR400XD Semidry/Wet: Wet PM ₁₀ control efficiency: 99.0% <u>Air Filtering System:</u> Manufacturer: AZTech Model: T6000-S Prefilter: 4" Pleated, MERV-11 Filter: Bag Filter, MERV-15 PM ₁₀ control efficiency: 99.0%	
2	<u>Welders:</u> Manufacturers: Miller, Lincoln Hobart, Thermal Arc, Linde, Syncrowave, ProWeld Weld Type: GMAW, FCAW, SMAW	Fully enclosed building with closed doors	Diamond Z Shop Doors 1-15 Structural Steel Shop Doors 1-6 Plasma Cutting Shop Doors 1-8 Container Shop Doors 1-7 Handrail Shop Doors 1-3 Tank Shop Doors 1-7
3	<u>Abrasive Blaster:</u> Manufacturer: Clemco Model: 2020 Hopper Capacity: 4 ft ³	None	<u>Abrasive Blasting Container Openings</u> ABR_BLAST 1 ABR_BLAST 2

Source ID No.	Sources	Control Equipment	Emission Point ID No.
4	<u>H60 Spray Guns:</u> Manufacturer: Graco Model: Pro XP H60T10 Transfer Efficiency: 60% Rated Capacity: 11.00 gal/hr Number of Guns: 2	<u>Paint Booth 1</u> Manufacturer: Global Finishing Solutions Model: CDG-2421PDT-100-BB-S Type: Pressurized Crossdraft Filter: Paint Pockets Filter Model: PP Series Filter Type: 20 inch x 20inch panel Number of filters: 84 PM ₁₀ control efficiency: 99.84%	<u>Paint Booth 1 (PAINTSTK1)</u> Exit height: 32.8 ft (10 m) Exit diameter: 3.5 ft (1 m) Exit flow rate: 30,618 acfm
	<u>H85 Spray Guns:</u> Manufacturer: Graco Model: Pro XP H85T10 Transfer Efficiency: 85% Rated Capacity: 11.25 gal/hr Number of Guns: 2		<u>Paint Booth 1, (PAINTSTK2)</u> Exit height: 32.8 ft (10 m) Exit diameter: 3.5 ft (1 m) Exit flow rate: 30,618 acfm
		<u>Paint Booth 2</u> Manufacturer: Global Finishing Solutions Model: CDF-1614PDT-120-BB-S Type: Pressurized Crossdraft Filter: Paint Pockets Model: PP Series Type: 20 inch x 20 inch panel Number of filters: 84 PM ₁₀ control efficiency: 99.84%	<u>Paint Booth 2, (PAINTSTK3)</u> Exit height: 26.9 ft (8.2 m) Exit diameter: 3.0 ft (0.9 m) Exit flow rate: 11,215 acfm
			<u>Paint Booth 2, (PAINTSTK4)</u> Exit height: 26.9 ft (8.2 m) Exit diameter: 3.0 ft (0.9 m) Exit flow rate: 11,215 acfm
5	<u>Heaters:</u> Manufacturer: Original Mr. Heater Model: Contractor Series Total heat input rating: 1.53 MMBtu/hr Max. heat input rating: 0.17 MMBtu /hr Fuel: Propane (LPG) Number of Units: 9	None	Diamond Z Shop Doors 1-15 Structural Steel Shop Doors 1-6 Plasma Cutting Shop Doors 1-8 Container Shop Doors 1-7 Handrail Shop Doors 1-3 Tank Shop Doors 1-7
6	<u>Hand Grinders:</u> Manufacturer: DeWalt, Makita Type: Handheld Wheel size: 5" through 9" Number of Units: 100	None	Diamond Z Shop Doors 1-15 Structural Steel Shop Doors 1-6 Plasma Cutting Shop Doors 1-8 Container Shop Doors 1-7 Handrail Shop Doors 1-3 Tank Shop Doors 1-7

Emissions Inventories

Potential to Emit

IDAPA 58.01.01 defines Potential to Emit as the maximum capacity of a facility or stationary source to emit an air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the facility or source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is state or federally enforceable. Secondary emissions do not count in determining the potential to emit of a facility or stationary source.

Using this definition of Potential to Emit an emission inventory was developed for the welding, abrasive blasting, plasma cutting, and coating operations at the facility (see Appendix A) associated with this proposed project. Emissions estimates of criteria pollutant, HAP PTE were based on emission factors from AP-42, operation of 8,760 hours per year, and process information specific to the facility for this proposed project. Hand grinders were listed in Table 1, but deemed insignificant because they are listed in a "List of Activities that May be Treated as Trivial", from a July 10, 1995 EPA memorandum titled *White Paper for Streamlined Development of Part 70 Permit Applications*.

Uncontrolled Potential to Emit

Using the definition of Potential to Emit, uncontrolled Potential to Emit is then defined as the maximum capacity of a facility or stationary source to emit an air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the facility or source to emit an air pollutant, including air pollution

control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall **not** be treated as part of its design **since** the limitation or the effect it would have on emissions **is not** state or federally enforceable.

The uncontrolled Potential to Emit is used to determine if a facility is a “Synthetic Minor” source of emissions. Synthetic Minor sources are facilities that have an uncontrolled Potential to Emit for regulated air pollutants or HAP above the applicable Major Source threshold without permit limits.

The following table presents the uncontrolled Potential to Emit for regulated air pollutants as submitted by the Applicant and verified by DEQ staff. See Appendix A for a detailed presentation of the calculations and the assumptions used to determine emissions for each emissions unit. For this steel fabrication and manufacturing operation, uncontrolled Potential to Emit is based upon a worst-case for operation of the facility of 8,760 hr/yr.

Table 2 UNCONTROLLED POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	PM ₁₀ /PM _{2.5}	SO ₂	NO _x	CO	VOC
	T/yr	T/yr	T/yr	T/yr	T/yr
Plasma Cutting	29.86	0.00	3.34	0.00	0.00
Welding	0.90	0.00	0.00	0.00	0.00
Abrasive Blasting	0.38	0.00	0.00	0.00	0.00
Coating	52.50	0.00	0.00	0.00	40.74
Heaters	0.04	0.08	0.65	0.38	0.05
Hand Grinders	<i>Insignificant</i>				
Total, Point Sources	83.68	0.08	3.99	0.38	40.79

The following table presents the uncontrolled Potential to Emit for HAP pollutants as submitted by the Applicant and verified by DEQ staff. See Appendix A for a detailed presentation of the calculations and the assumptions used to determine emissions for each emissions unit. For this steel fabrication and manufacturing operation, uncontrolled Potential to Emit is based upon a worst-case for operation of the facility of 8,760 hr/yr. Then, the worst-case maximum HAP Potential to Emit was determined.

Table 3 UNCONTROLLED POTENTIAL TO EMIT FOR HAZARDOUS AIR POLLUTANTS

Hazardous Air Pollutants	PTE (T/yr)
Butanone	0.76
Chromium (VI)	9.25E-05
Chromium total	0.41
Cobalt	6.40E-05
Cobalt 2-ethylhexanoate	2.40E-02
Cumene	0.01
Dibutyl Phthalate	5.87E-04
Ethylbenzene	1.80
Manganese	0.73
Methyl Isobutyl Ketone	0.28
Naphthalene	1.61E-02
Nickel and Nickel Oxide	0.26
Toluene	5.85
Triethylamine	1.60E-02
Xylene	8.03
o-Xylene	1.15
Total	19.34

Pre-Project Potential to Emit

Pre-project Potential to Emit is used to establish the change in emissions at a facility as a result of this project. This is an existing facility. However, since this is the first time the facility is receiving a permit, pre-project emissions are set to zero for all criteria pollutants.

Post Project Potential to Emit

Post project Potential to Emit is used to establish the change in emissions at a facility and to determine the facility's classification as a result of this project. Post project Potential to Emit includes all permit limits resulting from this project.

The following table presents the post project Potential to Emit for criteria pollutants from all emissions units at the facility as determined by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 4 POST PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	PM ₁₀ /PM _{2.5}		SO ₂		NO _x		CO		VOC	
	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)
Plasma	0.01	0.01	0.00	0.00	1.09	3.34	0.00	0.00	0.00	0.00
Welding	0.10	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Abrasive Blasting	0.27	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	53.78	40.74
Heaters	0.01	0.04	0.03	0.08	0.22	0.65	0.13	0.38	0.02	0.05
Hand Grinders	<i>Insignificant</i>									
Post Project Totals	0.47	0.91	0.03	0.08	1.31	3.99	0.13	0.38	53.80	40.79

a) Controlled average emission rate in pounds per hour is a daily average, based on the proposed daily operating schedule and daily limits.

b) Controlled average emission rate in tons per year is an annual average, based on the proposed annual operating schedule and annual limits.

Change in Potential to Emit

The change in facility-wide potential to emit is used to determine if a public comment period may be required and to determine the processing fee per IDAPA 58.01.01.225. The following table presents the facility-wide change in the potential to emit for criteria pollutants.

Table 5 CHANGES IN POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	PM ₁₀ /PM _{2.5}		SO ₂		NO _x		CO		VOC	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Pre-Project Potential to Emit	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Post Project Potential to Emit	0.47	0.91	0.03	0.08	1.31	3.99	0.13	0.38	53.80	40.79
Changes in Potential to Emit	0.47	0.91	0.03	0.08	1.31	3.99	0.13	0.38	53.80	40.79

Non-Carcinogenic TAP Emissions

A summary of the estimated PTE for emissions of non-carcinogenic toxic air pollutants (TAP) is provided in the following table.

Table 6 PROJECT POTENTIAL TO EMIT FOR NON-CARCINOGENIC TOXIC AIR POLLUTANTS

Non-Carcinogenic Toxic Air Pollutants	24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Non-Carcinogenic Screening Emission Level (lb/hr)	Exceeds Screening Level? (Y/N)
1-Butanol	0.32	10	No
1-Methoxy-2-Propanol Acetate	5.47	24	No
2-Methoxymethylethoxypropanol	0.48	40	No
Acetone	26.18	119	No
Aluminum	0.02	0.667	No
Butanone	26.18	39.3	Yes
Calcium Carbonate	0.02	0.667	Yes
Calcium Oxide	0.06	0.133	No
Carbon Black	1.53E-03	0.23	No
Chromium total	2.01E-04	0.033	No
Cobalt	7.30E-06	0.0033	No
Copper	6.14E-05	0.013	No
Crystalline Silica, respirable powder	3.74E-04	0.0067	No
Cumene	1.06	16.3	No
Dibutyl Phthalate	1.76	0.333	Yes
Ethanol	0.06	125	No
Ethylbenzene	8.07	29	No
heptan-2-one	52.37	15.7	Yes
Iron Oxide	0.08	0.333	No
Magnesium Oxide	1.10E-02	0.667	No
Manganese	4.49E-03	0.333	No
Methyl Isobutyl Ketone	9.55	13.7	No
Molybdenum	1.39E-05	0.333	No
Naphthalene	3.20	3.33	No
n-Butyl Acetate	19.87	47.3	No
Phosphorus	4.06E-06	0.007	No
Silicates - Amorphous	0.39	0.667	No
Silicon	5.49E-05	0.667	No
Stoddard Solvent	0.62	35	No
Toluene	17.42	25	No
Triethylamine	0.13	0.27	No
Vanadium	1.28E-06	0.067	No
Xylene	47.50	29	Yes
Zinc Oxide	1.47E-03	0.333	No

Some of the PTEs for non-carcinogenic TAP were exceeded as a result of this project. Therefore, modeling was required for butanone, calcium carbonate, dibutyl phthalate, heptan-2-one, and xylene because the 24-hour average non-carcinogenic screening ELs identified in IDAPA 58.01.01.585 were exceeded.

Carcinogenic TAP Emissions

A summary of the estimated PTE for emissions of carcinogenic toxic air pollutants (TAP) is provided in the following table.

Table 7 PROJECT POTENTIAL TO EMIT FOR CARCINOGENIC TOXIC AIR POLLUTANTS

Carcinogenic Toxic Air Pollutants	Annual Average Emissions Rates for Units at the Facility (lb/hr)	Carcinogenic Screening Emission Level (lb/hr)	Exceeds Screening Level? (Y/N)
Chromium (VI)	2.29E-07	5.60E-07	No
Naphthalene (PAH)	3.67E-03	9.10E-05	Yes
Nickel and Nickel Oxide	6.00E-05	2.70E-05	Yes

The PTEs for carcinogenic TAPs naphthalene (PAH) and nickel/nickel oxide were exceeded as a result of this project. Therefore, modeling is required for naphthalene and nickel/nickel oxide because the annual average carcinogenic screening ELs identified in IDAPA 58.01.01.586 were exceeded.

Post Project HAP Emissions

The following table presents the post project potential to emit for HAP pollutants from all emissions units at the facility as submitted by the Applicant and verified by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 8 HAZARDOUS AIR POLLUTANTS EMISSIONS POTENTIAL TO EMIT SUMMARY

Hazardous Air Pollutants	PTE (T/yr)
Butanone	0.76
Chromium	4.41E-04
Chromium (VI)	1.00E-06
Cobalt	3.20E-05
Cobalt 2-ethylhexanoate	0.02
Cumene	0.10
Dibutyl Phthalate	5.87E-04
Ethylbenzene	1.80
Manganese	0.02
Methyl Isobutyl Ketone	0.28
Naphthalene	0.02
Nickel	2.63E-04
Toluene	5.85
Triethylamine	0.02
Xylene	9.18
Totals	18.05

Ambient Air Quality Impact Analyses

As presented in the Modeling Memo in Appendix B, the estimated emission rates of VOC and TAP from this project exceeded applicable screening emission levels (EL) and published DEQ modeling thresholds established in IDAPA 58.01.01.585-586 and in the State of Idaho Air Quality Modeling Guideline¹. Refer to the Emissions Inventories section for additional information concerning the emission inventories.

The applicant has demonstrated pre-construction compliance to DEQ's satisfaction that emissions from this facility will not cause or significantly contribute to a violation of any ambient air quality standard. The applicant has also demonstrated pre-construction compliance to DEQ's satisfaction that the emissions increase due to this permitting action will not exceed any acceptable ambient concentration (AAC) or acceptable ambient concentration for carcinogens (AACC) for toxic air pollutants (TAP). A summary of the Ambient Air Impact Analysis for TAPs is provided in Appendix A and B.

¹ Criteria pollutant thresholds in Table 2, State of Idaho Guideline for Performing Air Quality Impact Analyses, Doc ID AQ-011, September 2013.

An ambient air quality impact analyses document has been crafted by DEQ based on a review of the modeling analysis submitted in the application. That document is part of the final permit package for this permitting action (see Appendix B).

REGULATORY ANALYSIS

Attainment Designation (40 CFR 81.313)

The facility is located in Canyon County, which is designated as attainment or unclassifiable for PM_{2.5}, PM₁₀, SO₂, NO₂, CO, and Ozone. Refer to 40 CFR 81.313 for additional information.

Facility Classification

The AIRS/AFS facility classification codes are as follows:

For HAPs (Hazardous Air Pollutants) Only:

- A = Use when any one HAP has permitted emissions > 10 T/yr or if the aggregate of all HAPS (Total HAPs) has permitted emissions > 25 T/yr.
- SM80 = Use if a synthetic minor (uncontrolled HAPs emissions are > 10 T/yr or if the aggregate of all uncontrolled HAPs (Total HAPs) emissions are > 25 T/yr and permitted emissions fall below applicable major source thresholds) and the permit sets limits > 8 T/yr of a single HAP or ≥ 20 T/yr of Total HAPs.
- SM = Use if a synthetic minor (uncontrolled HAPs emissions are > 10 T/yr or if the aggregate of all uncontrolled HAPs (Total HAPs) emissions are > 25 T/yr and permitted emissions fall below applicable major source thresholds) and the permit sets limits < 8 T/yr of a single HAP and/or < 20 T/yr of Total HAPs.
- B = Use when the potential to emit (i.e. uncontrolled emissions and permitted emissions) are below the 10 and 25 T/yr HAP major source thresholds.
- UNK = Class is unknown.

For All Other Pollutants:

- A = Use when permitted emissions of a pollutant are > 100 T/yr.
- SM80 = Use if a synthetic minor for the applicable pollutant (uncontrolled emissions are > 100 T/yr and permitted emissions fall below 100 T/yr) and permitted emissions of the pollutant are ≥ 80 T/yr.
- SM = Use if a synthetic minor for the applicable pollutant (uncontrolled emissions are > 100 T/yr and permitted emissions fall below 100 T/yr) and permitted emissions of the pollutant are < 80 T/yr.
- B = Use when the potential to emit (i.e. uncontrolled emissions and permitted emissions) are below the 100 T/yr major source threshold.
- UNK = Class is unknown.

Table 9 REGULATED AIR POLLUTANT FACILITY CLASSIFICATION

Pollutant	Uncontrolled PTE (T/yr)	Permitted PTE (T/yr)	Major Source Thresholds (T/yr)	AIRS/AFS Classification
PM	113.93	1.33	100	SM
PM ₁₀	83.66	0.91	100	B
PM _{2.5}	83.32	0.57	100	B
SO ₂	0.08	0.08	100	B
NO _x	3.99	3.99	100	B
CO	0.38	0.38	100	B
VOC	40.79	40.79	100	B
HAP (single)	9.18	9.18	10	B
HAP (total)	19.24	18.05	25	B
Pb	0.18	0.0009	100	B

Permit to Construct (IDAPA 58.01.01.201)

IDAPA 58.01.01.201 Permit to Construct Required

A PTC is required for this existing steel fabrication facility in accordance with Section 7.C of the October 12, 2017, Consent Order agreement between DEQ and Rule Steel.

Tier II Operating Permit (IDAPA 58.01.01.401)

IDAPA 58.01.01.401 Tier II Operating Permit

The application was submitted for a permit to construct (refer to the Permit to Construct section), and an optional Tier II operating permit has not been requested. Therefore, the procedures of IDAPA 58.01.01.400–410 were not applicable to this permitting action.

Visible Emissions (IDAPA 58.01.01.625)

IDAPA 58.01.01.625 Visible Emissions

The sources of PM emissions at this facility are subject to the State of Idaho visible emissions standard of 20% opacity. This requirement is assured by Permit Conditions 2.4, 3.4, 4.4 and 5.4.

Fugitive Particulate Matter Emissions (IDAPA 58.01.01.650-651)

IDAPA 58.01.01.650 Rules for Control of Fugitive Dust

All reasonable precautions shall be taken to prevent the generation of fugitive dust. This requirement is assured by Permit Conditions 4.8.

Fuel Burning Equipment – Particulate Matter (IDAPA 58.01.01.675-676)

IDAPA 58.01.01.676 Standards for New Sources

The facility is subject to particulate matter emissions not to exceed 0.015 gr/dscf.

Rules for Control of Odors (IDAPA 58.01.01.775-776)

IDAPA 58.01.01.776 Rules for the Control of Odors

The facility is subject to the general restrictions for the control of odors from the facility. This requirement is assured by Permit Condition 5.5.

Particulate Matter – Process Weight Limitations (IDAPA 58.01.01.700-701)

IDAPA 58.01.01.701 Particulate Matter – New Equipment Process Weight Limitations

In accordance with IDAPA 58.01.01.700.02, no source shall be required to meet an emission limit of less than 1 lb/hr as determined based on process weight rate. Reasonable control of fugitive emissions and compliance with emission limits for coating operations (Permit Conditions 2.3, 3.3, 4.3, and 5.3) were considered adequate to ensure compliance with the facility-wide process weight-based PM emission limitation. The BRC threshold for PM_{2.5} is more stringent than the minimum allowable process weight-based PM emission limit specified in IDAPA 58.01.01.700.02

Title V Classification (IDAPA 58.01.01.300, 40 CFR Part 70)

IDAPA 58.01.01.301 Requirement to Obtain Tier I Operating Permit

Post project facility-wide emissions from this facility do not have a potential to emit greater than 100 tons per year for PM₁₀, SO₂, NO_x, CO, VOC, and HAP or 10 tons per year for any one HAP or 25 tons per year for all HAP combined as demonstrated previously in the Emissions Inventories Section of this analysis. Therefore, the facility is not a Tier I source in accordance with IDAPA 58.01.01.006 and the requirements of IDAPA 58.01.01.301 do not apply.

PSD Classification (40 CFR 52.21)

40 CFR 52.21 Prevention of Significant Deterioration of Air Quality

The facility is not a major stationary source as defined in 40 CFR 52.21(b)(1), nor is it undergoing any physical change at a stationary source not otherwise qualifying under paragraph 40 CFR 52.21(b)(1) as a major stationary source, that would constitute a major stationary source by itself as defined in 40 CFR 52. Therefore in accordance with 40 CFR 52.21(a)(2), PSD requirements are not applicable to this permitting action. The facility is not a designated facility as defined in 40 CFR 52.21(b)(1)(i)(a), and does not have facility-wide emissions of any criteria pollutant that exceed 250 T/yr.

NSPS Applicability (40 CFR 60)

New Source Performance Standards (NSPS) are nationally uniform standards applied to specific categories of stationary sources that are constructed, modified, or reconstructed after the standard was promulgated. NSPS are found in 40 CFR, Part 60, and usually represent a minimum level of control that is required on a new source. The following NSPS regulation was reviewed and determined to not apply to the Caldwell facility, as discussed in the following section.

40 CFR 60, Subpart SS Standards of Performance for Industrial Surface Coating: Large Appliances

Determination of applicability of this NSPS subpart to a proposed source within the Idaho Department of Environmental Quality (DEQ) jurisdiction has been delegated by EPA to DEQ.

This subpart is applicable to each surface coating operation in a large appliance surface coating line. Specifically, a surface coating line applying organic surface coatings to large appliance parts (i.e., lid, door, casing, and panel) or large appliance product (i.e., range, oven, microwave, refrigerator, freezer, washer, dryer, dishwasher, water heater, or trash compactor). Rule Steel is not subject to this subpart because the facility does not apply surface coatings to large appliance parts or products.

40 CFR 60, Subpart A Standards of Performance for Industrial Surface Coating: Large Appliances

Any stationary source that is subject to any NSPS regulation is also subject to the general notification, recordkeeping, and monitoring requirements of the NSPS General Provisions, unless the applicable Part 60 Subpart regulation specifically exempts the source from the provisions of Subpart A. Because Rule Steel's operations are not subject to NSPS rules, the General Provisions in 40 CFR 60, Subpart A do not apply.

NESHAP Applicability (40 CFR 61)

The proposed source is not an affected source subject to NESHAP in 40 CFR 61, and this permitting action does not alter the applicability status of existing affected sources at the facility.

MACT/GACT Applicability (40 CFR 63)

The facility has proposed to operate as a minor source of hazardous air pollutant (HAP) emissions, and may be subject to the requirements of 40 CFR 63, Subpart HHHHHH—National Emission Standards for Hazardous Air Pollutants: Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources. DEQ is also delegated this Subpart.

40 CFR 63, Subpart HHHHHH National Emission Standards for Hazardous Air Pollutants: Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources

§ 63.11169 What is the purpose of this subpart?

In accordance with §63.11169, subpart HHHHHH establishes national emission standards for hazardous air pollutants (HAP) for area sources involved in paint stripping operations that involve the use of chemical strippers that contain methylene chloride in paint removal processes or spray application of coatings containing compounds

of chromium (Cr), lead (Pb), manganese (Mn), nickel (Ni), or cadmium (Cd), collectively referred to as the target HAP to any part or product made of metal or plastic, or combinations of metal and plastic that are not motor vehicles or mobile equipment.

§ 63.11170 Am I subject to this subpart?

Rule Steel performs spray application of coatings, as defined in §63.11180, to fabricated steel parts including operations that are located in stationary structures at fixed locations. Rule Steel does not perform paint stripping using methylene chloride. Rule Steel is not a major source of HAP, is not located at a major source, and is not part of a major source of HAP emissions.

Also, Rule Steel submitted a petition for exemption from 40 CFR §63.11180 to the U.S. EPA January 20, 2017. A response was issued by the EPA Region 10 Stationary Source Manager dated July 21, 2017. The exemption letter indicates that, based on the signed certification that none of the coatings sprayed at the Rule Steel Caldwell facility contain the target HAP, EPA accepted the petition for exemption from 40 CFR Part 63 Subpart HHHHHH. Consequently, these requirements do not currently apply to Rule Steel's Caldwell facility.

Rule Steel has proposed to operate welding, plasma cutting and blasting operations on carbon steel and stainless steel, and may be subject to the requirements of 40 CFR 63, Subpart XXXXXX–National Emission Standards for Hazardous Air Pollutants: Area Source Standards for Nine Metal Fabrication and Finishing Source Categories.

40 CFR 63, Subpart XXXXXX National Emission Standards for Hazardous Air Pollutants: Area Source Standards for Nine Metal Fabrication and Finishing Source Categories

§ 63.11169 What is the purpose of this subpart?

In accordance with §63.11522, subpart XXXXXX establishes national emission standards for hazardous air pollutants (HAP) for area sources involved in one of the nine source categories in metal fabrication and finishing operations listed in 40 CFR 63 Subpart XXXXXX Table 1.

§ 63.11170 Am I subject to this subpart?

A facility is subject to the published rule if the facility owns or operates an area source that is primarily engaged in the operations in one of the nine source categories:

1. Electrical and Electronic Equipment Finishing Operations;
2. Fabricated Metal Products;
3. Fabricated Plate Work (Boiler Shops);
4. Fabricated Structural Metal Manufacturing;
5. Heating Equipment, except Electric;
6. Industrial Machinery and Equipment Finishing Operations;
7. Iron and Steel Forging;
8. Primary Metal Products Manufacturing; and
9. Valves and Pipe Fittings.

From the October 24, 2016 DEQ AQ-C7 Inspection report:

Rule Steel metal fabrication operations are included under the nine manufacturing subcategories regulated by Table 1, Subpart XXXXXX of 40 CFR 63. On April 14, 2017, DEQ received a letter from Rule Steel via hand delivery to the DEQ state office front desk. In the letter, Rule Steel concluded they utilize appropriate SIC and NAICS codes for their business segments, and the facility is not subject to regulation under Subpart 6X because the facility is not primarily engaged in any of the activities covered by listed source categories. Although DEQ believes other SIC/NAICS codes for the Grinders and Grinder parts (3531/333120) are a better description of the source category than those currently used by Rule Steel, DEQ has determined that the definition of primarily engaged in 40 CFR 63.11522 should be strictly interpreted to mean the facility must be primarily engaged in one source category. The definition simply states that primarily engaged “means the manufacturing, fabricating, or forging of one or more products listed in one of the nine metal fabrication and finishing source category descriptions...” The definition does not state that primarily engaged includes an aggregate of the categories. Since the revenue from each of the three identified source categories are all less than 50% of the total revenue,

Rule Steel is not primarily engaged in any one source category for the purposes of 40 CFR 63 Subpart XXXXXX, and the appropriateness of specific SIC/NAICS codes becomes a moot issue. Therefore, after consulting with DEQ's Stationary Source Program and Idaho Attorney General's office, I (Zach) concur with Rule Steel's conclusion that 40 CFR 63 Subpart XXXXXX is not applicable to Rule Steel's operations under their current product mix. However, Subpart XXXXXX may become applicable in the future if the revenue from one product (source category), such as structural steel manufacturing or grinders, becomes greater than 50% of the facilities total revenue. DEQ has not consulted with EPA Region 10 regarding the applicability determination. Therefore, 40 CFR 63, Subpart XXXXXX is not applicable to Rule Steel's metal fabrications and finishing operations, at this time.

The facility has proposed to operate coating operations on carbon steel and stainless steel, and may be subject to the requirements of 40 CFR 63, Subpart MMMM–National Emission Standards for Hazardous Air Pollutants: Surface Coating of Miscellaneous Metal Parts and Products.

40 CFR 63, Subpart MMMM National Emission Standards for Hazardous Air Pollutants:
Surface Coating of Miscellaneous Metal Parts and Products

§ 63.3880 What is the purpose of this subpart?

In accordance with §63.3890, subpart MMMM establishes national emission standards for hazardous air pollutants (HAP) for area sources involved in miscellaneous metal parts and products surface coating facilities.

§ 63.3881 Am I subject to this subpart?

This rule is applicable to a miscellaneous metal parts and products surface coating facility that uses two hundred fifty gallons per year or more of coatings that contain hazardous air pollutants and is a major source, or is located at a major source, or is part of a major source of HAP emissions. Rule Steel does use more than two hundred fifty gallons per year or more of coatings that contain hazardous air pollutants but is not a major source of HAP emissions. Therefore, this subpart does not apply to Rule Steel.

40 CFR 63, Subpart A Standards of Performance for Industrial Surface Coating: Large
Appliances

Any stationary source that is subject to any 40 CFR 63 NESHAP regulation is also subject to the general notification, monitoring, performance testing, reporting and recordkeeping, and operation and maintenance requirements of the NESHAP General Provisions, unless the applicable Part 63 Subpart regulation specifically exempts the source from the provisions of Subpart A. Because the operations at Rule Steel are not subject to any 40 CFR 63 NESHAP rules at this time, the General Provisions of Subpart A do not apply.

Permit Conditions Review

This section describes the permit conditions for this initial permit.

Initial Permit Condition 1.1

Permit Condition 1.1 describes this is an initial permit to construct for Rule Steel. Table 1.1 lists Rule Steel's regulated sources and applicable control equipment, if any, as was provided by the applicant.

PLASMA CUTTING OPERATION

Initial Permit Condition 2.1 and 2.2

Permit Condition 2.1 describes plasma cutting operations and 2.2 lists the plasma cutters and their controls.

Initial Permit Condition 2.3

Permit Condition 2.3 establishes PM₁₀ and NO_x emission limits for the plasma cutting operations as proposed by the Applicant and verified by DEQ staff.

Initial Permit Condition 2.4

Permit Condition 2.4 establishes a 20% opacity limit for the plasma cutting operation stack, vents, or functionally equivalent openings associated with the plasma cutting operations and references the procedures for determining opacity in IDAPA 58.01.01.625.

Initial Permit Condition 2.5

Permit Condition 2.5 lists the annual limit for hours of plasma cutting operations which was requested by the applicant. This assumption was used by the applicant in the emission inventory to estimate PM/PM₁₀/PM_{2.5}, NO_x, and TAP emissions and is necessary to demonstrate regulatory compliance.

Initial Permit Condition 2.6

Permit Condition 2.6 establishes the material restriction for plasma cutting operations of only carbon steel and stainless steel may be processed. The permit condition also requires that no more than 15% by weight of metal cut may be stainless steel. This is important to ensure compliance with the nickel TAP increment.

Initial Permit Condition 2.7

Permit Condition 2.7 restricts operation of the plasma cutting tables to be done with a water bath where the burner is submerged a minimum of 70 millimeters below the water surface. This assumption was used in the applicant's emission inventory to estimate PM/PM₁₀/PM_{2.5}, NO_x, and TAP emissions from plasma cutting that was used to demonstrate regulatory compliance.

Initial Permit Condition 2.8 and 2.9

Permit Condition 2.8 and 2.9 require the permittee to use a filtration system during Plasma Cutting operations that ensures a minimum of 95% control efficiency with an O&M Manual for the filtration system on site at all times which describes inspection and operation of the system.

Initial Permit Condition 2.10

Permit Condition 2.10 specifies that the Permittee shall monitor and record operating hours of plasma cutting operations to demonstrate compliance with Permit Condition 2.5.

Initial Permit Condition 2.11

Permit Condition 2.11 specifies that the Permittee maintain records of the metal processed through plasma cutting operations to demonstrate compliance with Permit Condition 2.6.

Initial Permit Condition 2.12 and 2.13

Permit Condition 2.12 and 2.13 specifies that the Permittee maintain records requirements of operating and maintaining the plasma cutting air filtration system. This is necessary to ensure compliance with the 95% control efficiency and O&M Manual requirements in permit conditions 2.8 and 2.9.

Initial Permit Condition 2.14

Permit Condition 2.14 requires the Permittee to maintain records according to the Monitoring and Recordkeeping General Provision.

WELDING OPERATION

Initial Permit Condition 3.1 and 3.2

Permit Condition 3.1 describes the welding operations and 3.2 lists welders and controls.

Initial Permit Condition 3.3

Permit Condition 3.3 establishes welding PM₁₀ emission limits as proposed by the Applicant and verified by DEQ staff.

Initial Permit Condition 3.4

Permit Condition 3.4 establishes a 20% opacity limit for the welding operations stack, vents, or functionally equivalent openings associated with the welding operations and references the procedures for determining opacity in IDAPA 58.01.01.625.

Initial Permit Condition 3.5

Permit Condition 3.5 establishes a closed door requirement operating requirements for welding. This assumption was used in the applicant's emission inventory to estimate a fifty percent reduction in PM₁₀ and TAP emission estimates from welding that was used to demonstrate regulatory compliance.

Initial Permit Condition 3.6

Permit Condition 3.6 establishes the annual permitted electrode material limits in Table 3.3 which are necessary to ensure regulatory compliance of PM₁₀ and TAP emissions from welding.

Initial Permit Condition 3.7 and 3.8

Permit Condition 3.7 and 3.8 require monitoring and recordkeeping for the welding operations to establish compliance with electrode usage limits in Permit Condition 3.6.

Initial Permit Condition 3.9

Permit Condition 3.9 requires the Permittee to maintain records according to the Monitoring and Recordkeeping General Provision.

ABRASIVE BLASTING OPERATION

Initial Permit Condition 4.1 and 4.2

Permit Condition 4.1 describes abrasive blasting operation and 4.2 lists the abrasive blaster and controls.

Initial Permit Condition 4.3

Permit Condition 4.3 establishes abrasive blasting operation PM₁₀ emission limits as proposed by the Applicant and verified and modeled by DEQ staff.

Initial Permit Condition 4.4

Permit Condition 4.4 establishes a 20% opacity limit for the abrasive blasting operation stack, vents, or functionally equivalent openings associated with the abrasive blasting operations and references the procedures for determining opacity in IDAPA 58.01.01.625.

Initial Permit Condition 4.5 and 4.6

Permit Conditions 4.5 and 4.6 establish daily and annual blasting media throughput limits necessary to comply with PM₁₀ permit limits in permit condition 4.3.

Initial Permit Condition 4.7

Permit Condition 4.7 specifies blasting media content requirements of 50% or less of Kleen Blast and 50% or more of Crushed Glass, which is necessary to ensure regulatory compliance with PM₁₀ emissions

Initial Permit Condition 4.8

Permit Condition 4.8 requires the Permittee to make all reasonable precautions to prevent fugitive emissions.

Initial Permit Condition 4.9 and 4.10

Permit Conditions 4.9 and 4.10 require the Permittee to monitor and maintain records for daily and annual throughput limits in Permit Conditions 4.5 and 4.6.

Initial Permit Condition 4.11

Permit Condition 4.11 specifies recordkeeping requirements for the records in Permit Conditions 4.9 and 4.10.

COATING OPERATION

Initial Permit Condition 5.1 and 5.2

Permit Condition 5.1 describes coating operations and 5.2 lists the paint booths with their control devices and emission points.

Initial Permit Condition 5.3

Permit Condition 5.3 established the coating operations emission limits as proposed by the Applicant and verified and modeled by DEQ staff.

Initial Permit Condition 5.4

Permit Condition 5.4 establishes a 20% opacity limit for the coating operation stack, vents, or functionally equivalent openings associated with the coating operations and references the procedures for determining opacity in IDAPA 58.01.01.625.

Initial Permit Condition 5.5

Permit Condition 5.5 establishes odor management requirements to ensure compliance with IDAPA 58.01.01.776.

Initial Permit Condition 5.6

Permit Condition 5.6 contains annual coating usage limits in Table 5.3, which also lists coating groups and permitted coatings contained in those groups.

Initial Permit Condition 5.7

Permit Condition 5.7 establishes the approved daily coating usage scenario with daily limits.

Initial Permit Condition 5.8

Permit Condition 5.8 requires the permittee to conduct coating activities in a spray booth.

Initial Permit Condition 5.9

Permit Condition 5.9 specifies spray gun requirements of all painting shall be conducted with high-volume-low-pressure (HVLP) spray guns with a minimum 60% transfer efficiency.

Initial Permit Condition 5.10

Permit Condition 5.10 requires the permittee to maintain the spray booth filtration system to ensure a minimum control efficiency of 99% for PM₁₀.

Initial Permit Condition 5.11

Permit Condition 5.11 requires the permittee to develop and maintain an Operation and Maintenance manual that is required to be on site at all times.

Initial Permit Condition 5.12

Permit Condition 5.12 describes a Daily Coating Usage Scenario and requirements for its use.

Initial Permit Condition 5.13

Permit Condition 5.13 lists requirements to propose or implement a new Daily Coating Usage Scenario.

Initial Permit Condition 5.14 and 5.15

Permit Condition 5.14 lists steps for calculating TAP emissions for a new or alternate coating to use in a Daily Coating Usage Scenario. Permit Condition 5.15 contains the method for demonstrating TAP compliance with Screening Emission Rates and Modeled Concentration Limits using Table 5.5.

Initial Permit Condition 5.16

Permit Condition 5.16 explains the method for demonstrating compliance with PM₁₀/PM_{2.5}, VOC, and HAP emission limits in Table 5.2.

Initial Permit Condition 5.17

Permit Condition 5.17 contains monitoring and recordkeeping requirements for a Daily Coating Usage Scenario.

Initial Permit Condition 5.18

Permit Condition 5.18 contains daily monitoring and recordkeeping requirements.

Initial Permit Condition 5.19

Permit Condition 5.19 contains annual monitoring and recordkeeping requirements.

Initial Permit Condition 5.20

Permit Condition 5.20 contains requirements for Safety Data Sheet recordkeeping.

Initial Permit Condition 5.21

Permit Condition 5.21 contains requirements for coating usage scenario reporting.

Initial Permit Condition 5.22

Permit Condition 5.22 contains requirements for paint booth filter recordkeeping.

Initial Permit Condition 5.23

Permit Condition 5.23 contains requirements for spray gun recordkeeping.

Initial Permit Condition 5.24

Permit Condition 5.24 contains requirements for odor complaints recordkeeping.

GENERAL PROVISIONS

Initial Permit Condition 6.1

The duty to comply general compliance provision requires that the permittee comply with all of the permit terms and conditions pursuant to Idaho Code §39-101.

Initial Permit Condition 6.2

The maintenance and operation general compliance provision requires that the permittee maintain and operate all treatment and control facilities at the facility in accordance with IDAPA 58.01.01.211.

Initial Permit Condition 6.3

The obligation to comply general compliance provision specifies that no permit condition is intended to relieve or exempt the permittee from compliance with applicable state and federal requirements, in accordance with IDAPA 58.01.01.212.01.

Initial Permit Condition 6.4

The inspection and entry provision requires that the permittee allow DEQ inspection and entry pursuant to Idaho Code §39-108.

Initial Permit Condition 6.5

The permit expiration construction and operation provision specifies that the permit expires if construction has not begun within two years of permit issuance or if construction has been suspended for a year in accordance with IDAPA 58.01.01.211.02.

Initial Permit Condition 6.6

The notification of construction and operation provision requires that the permittee notify DEQ of the dates of construction and operation, in accordance with IDAPA 58.01.01.211.03.

Initial Permit Condition 6.7

The performance testing notification of intent provision requires that the permittee notify DEQ at least 15 days prior to any performance test to provide DEQ the option to have an observer present, in accordance with IDAPA 58.01.01.157.03.

Initial Permit Condition 6.8

The performance test protocol provision requires that any performance testing be conducted in accordance with the procedures of IDAPA 58.01.01.157, and encourages the permittee to submit a protocol to DEQ for approval prior to testing.

Initial Permit Condition 6.9

The performance test report provision requires that the permittee report any performance test results to DEQ within 60 days of completion, in accordance with IDAPA 58.01.01.157.04-05.

Initial Permit Condition 6.10

The monitoring and recordkeeping provision requires that the permittee maintain sufficient records to ensure compliance with permit conditions, in accordance with IDAPA 58.01.01.211.

Initial Permit Condition 6.11

The excess emissions provision requires that the permittee follow the procedures required for excess emissions events, in accordance with IDAPA 58.01.01.130-136.

Initial Permit Condition 6.12

The certification provision requires that a responsible official certify all documents submitted to DEQ, in accordance with IDAPA 58.01.01.123.

Initial Permit Condition 6.13

The false statement provision requires that no person make false statements, representations, or certifications, in accordance with IDAPA 58.01.01.125.

Initial Permit Condition 6.14

The tampering provision requires that no person render inaccurate any required monitoring device or method, in accordance with IDAPA 58.01.01.126.

Initial Permit Condition 6.15

The transferability provision specifies that this permit to construct is transferable, in accordance with the procedures of IDAPA 58.01.01.209.06.

Initial Permit Condition 6.16

The severability provision specifies that permit conditions are severable, in accordance with IDAPA 58.01.01.211.

PUBLIC REVIEW

Public Comment Opportunity

An opportunity for public comment period on the application was provided in accordance with IDAPA 58.01.01.209.01.c or IDAPA 58.01.01.404.01.c. During this time, there was a request for a public comment period on DEQ's proposed action. Refer to the chronology for public comment opportunity dates.

Public Comment Period

A public comment period was made available to the public in accordance with IDAPA 58.01.01.209.01.c. During this time, comments were/were not submitted in response to DEQ's proposed action. Refer to the chronology for public comment period dates.

A response to public comments document has been crafted by DEQ based on comments submitted during the public comment period. That document is part of the final permit package for this permitting action.

APPENDIX A – EMISSIONS INVENTORIES

[illegible]



STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

Facility Wide Controlled Emission Inventory

Table 3 Pre- and Post Project Non-Carcinogenic TAP Emissions Summary Potential to Emit

Non-Carcinogenic Toxic Air Pollutants (sum of all emissions)	Pre-Project 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Post Project 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Change in 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Non- Carcinogenic Screening Emission Level (lb/hr)	Exceeds Screening Level? (Y/N)
1-Butanol	--	0.32	0.32	10	No
1-Methoxy-2-Propanol Acetate	--	5.47	5.47	24	No
2-Methoxymethylthoxypropanol	--	0.48	0.48	40	No
Acetone	--	26.18	26.18	119	No
Aluminum	--	0.02	0.02	0.667	No
Butanone	--	26.18	26.18	39.3	No
Calcium Carbonate	--	0.02	0.02	0.667	No
Calcium Oxide	--	0.06	0.06	0.133	No
Carbon Black	--	1.53E-03	1.53E-03	0.23	No
Chromium total	--	2.01E-04	2.01E-04	0.033	No
Cobalt	--	7.30E-06	7.30E-06	0.0033	No
Copper	--	6.14E-05	6.14E-05	0.013	No
Crystalline Silica, respirable powder	--	3.74E-04	3.74E-04	0.0067	No
Cumene	--	1.06	1.06	16.3	No
Dibutyl Phthalate	--	1.76	1.76	0.333	Yes
Ethanol	--	0.06	0.06	125	No
Ethylbenzene	--	8.07	8.07	29	No
heptan-2-one	--	52.37	52.37	15.7	Yes
Iron Oxide	--	0.08	0.08	0.333	No
Magnesium Oxide	--	0.01	0.01	0.667	No
Manganese	--	4.49E-03	4.49E-03	0.333	No
Methyl Isobutyl Ketone	--	9.55	9.55	13.7	No
Molybdenum	--	1.39E-05	1.39E-05	0.333	No
Naphthalene	--	3.20	3.20	3.33	No
n-Butyl Acetate	--	19.87	19.87	47.3	No
Phosphorus	--	4.06E-06	4.06E-06	0.007	No
Silicates - Amorphous	--	0.39	0.39	0.667	No
Silicon	--	5.49E-05	5.49E-05	0.667	No
Stoddard Solvent	--	0.62	0.62	35	No
Toluene	--	17.42	17.42	25	No
Triethylamine	--	0.13	0.13	0.27	No
Vanadium	--	1.28E-06	1.28E-06	0.067	No
Xylene	--	47.51	47.51	29	Yes
Zinc Oxide	--	1.47E-03	1.47E-03	0.333	No



STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

Facility Wide Controlled Emission Inventory

Table 4 Pre- and Post Project Carcinogenic TAP Emissions Summary Potential to Emit

Carcinogenic Toxic Air Pollutants (sum of all emissions)	Pre-Project Annual Average Emissions Rates for Units at the Facility (lb/hr)	Post Project Annual Average Emissions Rates for Units at the Facility (lb/hr)	Change in Annual Average Emissions Rates for Units at the Facility (lb/hr)	Carcinogenic Screening Emission Level (lb/hr)	Exceeds Screening Level? (Y/N)
Chromium (VI)	--	2.29E-07	2.29E-07	0.00000056	No
Naphthalene	--	3.67E-03	3.67E-03	0.000091	Yes
Nickel and Nickel Oxide	--	6.00E-05	6.00E-05	0.000027	Yes

Table 5 Facility-Wide HAP Potential to Emit

HAP Pollutants	PTE (T/yr)
butanone	0.76
Chromium	4.41E-04
Chromium (VI)	1.00E-06
Cobalt	3.20E-05
Cobalt 2-ethylhexanoate	0.02
Cumene	0.10
Dibutyl Phthalate	5.87E-04
Ethylbenzene	1.80
Manganese	0.02
Methyl Isobutyl Ketone	0.28
Naphthalene	0.02
Nickel	2.63E-04
Toluene	5.85
Triethylamine	0.02
Xylene *	9.18
Total	18.05

* Maximum Individual HAP

Facility-Wide Emissions Inventory

Rule Steel

Summary of Uncontrolled Emissions

Activity	Plasma Cutter	Welding	Abrasive Blasting	Paint Booth	Heater	Total Emissions
Pollutant	tpy	tpy	tpy	tpy	tpy	tpy
NO _x	3.34				0.65	3.99
CO					0.38	0.38
SO ₂					0.08	0.08
PM	59.71	0.90	0.78	52.50	0.04	113.93
PM ₁₀	29.86	0.90	0.38	52.50	0.04	83.66
PM _{2.5}	29.86	0.90	0.04	52.50	0.04	83.32
VOC				40.74	0.05	40.79
Lead	2.09E-01					2.09E-01
CO ₂ e					639	639

Summary of Speciated Uncontrolled Emissions

Activity	Plasma Cutter	Welding	Abrasive Blasting	Paint Booth	Heater	Total Emissions
CAS No. Pollutant	tpy	tpy	tpy	tpy	tpy	tpy
71-36-3 1-Butanol	---	---	---	2.14E-03	---	2.14E-03
108-65-6 1-Methoxy-2-Propanol Acetate	---	---	---	1.80	---	1.80
34590-94-8 2-Methoxymethylethoxypropanol	---	---	---	1.20E-01	---	1.20E-01
67-64-1 Acetone	---	---	---	0.56	---	0.56
7429-90-5 Aluminum	1.17E-01	---	---	---	---	1.17E-01
1344-28-1 Aluminum Oxide	---	---	2.23E-02	---	---	2.23E-02
78-93-3 butanone	---	---	---	0.76	---	0.76
1317-65-3 Calcium Carbonate	---	---	---	0.00	---	0.00
1305-78-8 Calcium Oxide	---	---	0.09	---	---	8.93E-02
1333-86-4 Carbon Black	---	---	---	3.12E-04	---	3.12E-04
18540-29-9 Chromium (VI)	9.06E-05	1.91E-06	---	---	---	9.25E-05
7440-47-3 Chromium total	4.12E-01	4.70E-04	---	---	---	4.12E-01
7440-48-4 Cobalt	---	6.40E-05	---	---	---	6.40E-05
136-52-7 Cobalt 2-ethylhexanoate	---	---	---	2.40E-02	---	2.40E-02
7440-50-8 Copper	1.93E-01	---	---	---	---	1.93E-01
14808-60-7 Crystalline Silica, respirable powder	---	---	3.92E-04	6.38E-05	---	0.00
98-82-8 Cumene	---	---	---	0.10	---	0.10
84-74-2 Dibutyl Phthalate	---	---	---	5.87E-04	---	5.87E-04
64-17-5 Ethanol	---	---	---	1.50E-02	---	1.50E-02
100-41-4 Ethylbenzene	---	---	---	1.80	---	1.80
110-43-0 heptan-2-one	---	---	---	2.21	---	2.21
1309-37-1 Iron Oxide	---	---	0.11	---	---	0.11
1309-48-4 Magnesium Oxide	---	---	1.53E-02	---	---	0.02
7439-96-5 Manganese	6.89E-01	3.74E-02	---	---	---	0.73
108-10-1 Methyl Isobutyl Ketone	---	---	---	0.28	---	0.28
7439-98-7 Molybdenum	4.26E-02	---	---	---	---	4.26E-02
91-20-3 Naphthalene	---	---	---	1.61E-02	---	1.61E-02
123-86-4 n-Butyl Acetate	---	---	---	2.34	---	2.34
7440-02-0 Nickel and Nickel Oxide	2.60E-01	2.65E-04	---	---	---	2.61E-01
7723-14-0 Phosphorus	1.28E-02	---	---	---	---	0.01
112926-00-8 Silicates - Amorphous	---	---	0.54	---	---	0.54
7440-21-3 Silicon	1.73E-01	---	---	---	---	1.73E-01
8052-41-3 Stoddard Solvent	---	---	---	0.03	---	0.03
108-88-3 Toluene	---	---	---	5.85	---	5.85
121-44-8 Triethylamine	---	---	---	1.60E-02	---	1.60E-02
12604-58-9 Vanadium	4.06E-03	---	---	---	---	4.06E-03
1330-20-7 Xylene	---	---	---	8.03	---	8.03
95-47-6 o-Xylene	---	---	---	1.15	---	1.15
1314-13-2 Zinc Oxide	---	---	---	3.94E-05	---	3.94E-05

--- indicates pollutant is a hazardous air pollutant (HAP)

Facility-Wide Emissions Inventory Rule Steel

Summary of Controlled Emissions

Activity Pollutant	Plasma Cutter lb/hr tpy	Welding lb/hr tpy	Abrasive Blasting lb/hr tpy	Paint Booth lb/hr tpy	Heater lb/hr tpy	Total Emissions lb/hr tpy
NO _x	1.09	3.34			0.22	0.65
CO					0.13	0.38
SO ₂					0.03	0.08
PM	0.03	0.03	0.56	0.08	0.01	0.04
PM ₁₀	0.01	0.10	0.27	0.08	0.01	0.04
PM _{2.5}	0.01	0.10	0.04	0.03	0.01	0.04
VOC				53.78	0.02	53.79
Lead	9.51E-05	1.04E-04				9.51E-05
CO ₂ e						639

Summary of Speciated Controlled Emissions

CAS No.	Activity Pollutant	Plasma Cutter lb/hr tpy	Welding lb/hr tpy	Abrasive Blasting lb/hr tpy	Paint Booth lb/hr tpy	Heater lb/hr tpy	Total Emissions lb/hr tpy
71-36-3	1-Butanol				0.32		0.32
108-65-6	1,1-Methoxy-2-Propanol Acetate				5.47		5.47
34590-94-8	1,2-Methoxymethylthoxypropanol				0.48		0.48
67-64-1	Acetone				26.18		26.18
7429-90-5	Aluminum	4.17E-05					4.17E-05
1344-28-1	Aluminum Oxide			0.02			0.02
78-93-3	butanone				26.18		26.18
1317-65-3	Calcium Carbonate				0.02		0.02
1305-78-8	Calcium Oxide			0.06			0.06
1333-86-4	Carbon Black				1.53E-03		1.53E-03
18540-29-9	Chromium (VI)	3.25E-08	2.19E-07				3.25E-08
7440-47-3	Chromium total	1.48E-04	2.35E-04				2.01E-04
7440-48-4	Cobalt		7.30E-06				7.30E-06
136-52-7	Cobalt 2-ethylhexanoate				1.85E+00		1.85E+00
7440-50-8	Copper	6.14E-05	9.67E-05				6.14E-05
14808-60-7	Crystalline Silica, respirable powder			2.87E-04	9.31E-05		3.74E-04
98-82-8	Cumene				1.06		1.06
84-74-2	Diethyl Phthalate				1.76		1.76
64-17-5	Ethanol				0.06		0.06
100-41-4	Ethylbenzene				8.07		8.07
110-43-0	heptan-2-one				52.37		52.37
1309-37-1	Iron Oxide			0.08			0.08
1309-48-4	Magnesium Oxide			1.10E-02			1.10E-02
7439-96-5	Manganese	2.19E-04	4.27E-03				4.49E-03
108-10-1	Methyl Isobutyl Ketone						
7439-98-7	Molybdenum	1.39E-05	2.13E-05		9.55		9.55
91-20-3	Naphthalene				3.20		3.20
123-86-4	n-Butyl Acetate				19.87		19.87
7440-02-0	Nickel and Nickel Oxide	8.99E-05	3.03E-05				1.20E-04
7723-14-0	Phosphorus	4.06E-06	6.38E-06				4.06E-06
112926-00-8	Silicates - Amorphous			0.39			0.39
7440-21-3	Silicon	5.49E-05					5.49E-05
8052-41-3	Stoddard Solvent						
108-88-3	Toluene				0.62		0.62
121-44-8	Triethylamine				17.42		17.42
12604-58-9	Vanadium	1.28E-06	2.03E-06		0.13		0.13
1330-20-7	Xylene				45.65		45.65
95-47-6	p-Xylene				1.85		1.85
1314-13-2	Zinc Oxide				1.47E-03		1.47E-03

= indicates pollutant is a hazardous air pollutant (HAP)

Facility-Wide Emissions Inventory
Rule Steel

Plasma Cutter Emission Calculations

General Operational Parameters

Hours of Operation	24 hrs/day
% Stainless Steel Cut	6100 hrs/year
% Carbon Steel Cut	5% of all metal cut
	95% of all metal cut

Plasma Cutter Specifications

No. of Tables	2 tables
Metal Density	0.283 lb/cu. in.
Overall Control Efficiency ¹	99.95%
Water Table	99.0%
Air Filtration System	95.0%

Plasma Cutter Operational Specifications ²

Material Cut	Rate	Volume of Metal Removed (in ³ cut/hr/table)	Total Volume of Metal Removed (in ³ cut/hr)	Max. Mass Removed (lb cut/hr)
Carbon Steel	Short-Term	813	1625.4	459.99
	Long-Term	294	588.7	166.62
Stainless Steel	Short-Term	557	1113.75	315.19
	Long-Term	172	343.65	97.25

Emission Factors ³

Particulate Emission Factor	0.12 lb PM/lb metal cut
PM ₁₀ Emissions	50% of PM emitted
Hex. Chromium Emission Factor	0.00022 lb hex. Cr/total Cr in metal cut
Nitrogen Oxides (NO _x)	2.2 liters/min/table

Toxic metal content ⁴

Metal	Carbon Steel	Stainless Steel	Total Metal Cut
Aluminum	0.048%	5%	0.296%
Chromium	0.15%	18.26%	1.06%
Copper	0.32%	0.45%	0.33%
Lead	0.35%	0.35%	0.35%
Manganese	1.13%	1.91%	1.17%
Molybdenum	0.060%	0.44%	0.079%
Nickel	0.20%	8.11%	0.60%
Phosphorus	0.021%	0.034%	0.022%
Silicon	0.29%	0.30%	0.29%
Vanadium	0.007%	0%	0.007%

Facility-Wide Emissions Inventory Rule Steel

Plasma Cutter Emission Calculations

Pollutant	Carbon Steel Emission Rate		Stainless Steel Emission Rate		Emission Rate		Uncontrolled Emission Rate (tpy)
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	
PM	0.03	0.03	0.00	8.90E-04	0.03	0.03	59.71
PM ₁₀ /PM _{2.5}	0.01	0.01	4.73E-04	4.45E-04	0.01	0.01	29.86
NO _x	--	--	--	--	1.09	3.34	3.34

Speciated Emissions

Pollutant	CAS No.	Emission Limit Averaging Period ⁴	Emission Rate		Averaged Hourly Emission Rate (lb/hr, averaged for EL)	Uncontrolled Emission Rate (tpy)
			lb/hr	tpy		
Aluminum	7429-90-5	Carcinogenic	5.99E-05	5.84E-05	4.17E-05	0.12
Chromium total	7440-47-3	Carcinogenic	2.12E-04	2.06E-04	1.48E-04	0.41
Chromium (VI)	18540-29-9	Carcinogenic	4.66E-08	4.53E-08	3.25E-08	9.06E-05
Copper	7440-50-8	Carcinogenic	8.82E-05	9.67E-05	6.14E-05	0.19
Lead	7439-92-1	Carcinogenic	9.51E-05	1.04E-04	6.62E-05	0.21
Manganese	7439-96-5	Carcinogenic	3.14E-04	3.44E-04	2.19E-04	0.69
Molybdenum	7439-98-7	Carcinogenic	1.99E-05	2.13E-05	1.39E-05	0.04
Nickel	7440-02-0	Carcinogenic	1.29E-04	1.30E-04	8.99E-05	0.26
Phosphorus	7723-14-0	Carcinogenic	5.82E-06	6.38E-06	4.06E-06	0.01
Silicon	7440-21-3	Carcinogenic	7.89E-05	8.67E-05	5.49E-05	0.17
Vanadium	12604-58-9	Carcinogenic	1.84E-06	2.03E-06	1.28E-06	4.06E-03

= indicates pollutant is a hazardous air pollutant (HAP)

Conversions:

2000 lbs/ton
24,465 liters gas/g-mol gas, at 1 atm, 25°C
46,0055 g/g-mol, NO₂ molar mass
453.59 g/lb
60 min/hr

Notes:

- ¹ Overall control efficiency combines efficiencies of a water table and partial enclosure. Overall controll efficiency calculated based on equation 12.1-2 from EPA EIP Volume II Chapter 12.
- ² Control efficiency for water table based on Hypertherm paper, "Fume Emissions Testing for Plasma Arc Cutting" (February 1999).
- ³ Control efficiency of 95% for air filtration system inside building.
- ⁴ Volume of material removed based on Hypertherm Manual.
- ⁵ Emission factors for particulate matter is for plasma/laser arc cutting. Emission factors derived from source test data in Appendix B, 4-24-90, P/C report, A/N 184446, per SCAQMD Honeywell Permit Application #497492.
- ⁶ Nitrogen oxides emission factor from "Emission of Fume, Nitrogen Oxide and Noise in Plasma Cutting of Stainless and Mild Steel" for wet plasma cutting, stainless steel, 35mm thickness.
- ⁷ Metal content based on specifications provided by Rule Steel.
- ⁸ Emission Limits for Idaho Toxic Air Pollutants (TAPs) is based on hourly averaged emission rates. For non-carcinogenic TAPs, the averaging period is 24 hours. For carcinogenic TAPs, the averaging period is annual.

Facility-Wide Emissions Inventory Rule Steel

Welding Emission Calculations

General Operational Parameters

Control Efficiency ¹	50%
---------------------------------	-----

Emission Factors ²

Welding Type	Electrode Type (by AWS Classification)	Emission Factor (lb/10 ³ lb of electrode used)					
		Total Fume Emission Factor	Cr	Cr(VI)	Co	Mn	Ni
Gas Metal Arc Welding (GMAW) Flux Cored Arc Welding (FCAW)	E70S	5.2	0.001	--	0.001	0.318	0.001
	E308L	5.4	0.524	--	0.001	0.346	0.184
	E71T	12.2	0.002	--	0.001	0.662	0.004
	E308LT	9.1	--	--	--	--	--
Shielded Metal Arc Welding (SMAW)	E6011	38.4	0.005	--	0.001	0.998	0.005
	E7024	9.2	0.001	--	--	0.629	--
	E7018	18.4	0.006	--	0.001	1.03	0.002
	E6010	25.6	0.003	0.001	--	0.991	0.004

Electrode Usage

Welding Type	Max Usage by Welding Type lb/year	Electrode Type (by AWS Classification)	Max Usage ^a lb/year
Gas Metal Arc Welding (GMAW) Flux Cored Arc Welding (FCAW)	80,601	E70S	79,340
		E308L	1,261
	20,115	E71T	19,778
Shielded Metal Arc Welding (SMAW)		E308LT	337
		E6011	23,335
	38,649	E7024	7,292
		E7018	4,193
		E6010	3,828

Facility-Wide Emissions Inventory Rule Steel

Welding Emission Calculations

Emission Calculations

Pollutant	Emission Rate		Uncontrolled Emission Rate (tpy)
	lb/hr	tpy	
PM ₁₀ /PM _{2.5}	0.10	0.45	0.90

Speciated Emissions

Pollutant	CAS No.	Emission Limit Averaging Period ⁴	Emission Rate		Averaged Hourly Emission Rate (lb/hr, averaged for EL)	Uncontrolled Emission Rate (tpy)
			lb/hr	tpy		
Chromium	7440-47-3	Carcinogenic	5.37E-05	2.35E-04	5.37E-05	4.70E-04
Chromium (VI)	18540-29-9	Carcinogenic	2.19E-07	9.57E-07	2.19E-07	1.91E-06
Cobalt	7440-48-4	Carcinogenic	7.30E-06	3.20E-05	7.30E-06	6.40E-05
Manganese	7439-96-5	Carcinogenic	0.004	0.02	0.004	0.04
Nickel	7440-02-0	Carcinogenic	3.03E-05	1.33E-04	3.03E-05	2.65E-04

= Indicates pollutant is a hazardous air pollutant (HAP)

Conversions

2000 lb/ton

Notes

- ¹ Control efficiency of 50% for building enclosure based on April 18, 2018 email from Idaho DEQ staff.
- ² Emission factors for fumes produced during welding activities are from AP-42 Chapter 12.19 - Electric Arc Welding. <https://www3.epa.gov/ttn/chief/ap42/ap42/ch12/final/c12s19.pdf>
- ³ Usage is based on projected maximum usage at the facility.
- ⁴ Emission Limits for Idaho Toxic Air Pollutants (TAPs) is based on hourly averaged emission rates. For non-carcinogenic TAPs, the averaging period is 24 hours. For carcinogenic TAPs, the averaging period is annual.

Facility-Wide Emissions Inventory
Rule Steel

Abrasive Blasting Emission Calculations

General Operational Parameters		
Control efficiency ¹	0%	
% Crushed Glass	50% of all blast material	
% Klean Blast	50% of all blast material	

Blasting Specifications	
Blast material usage ²	500 lbs/day 58,000 lb/year (maximum)

Emission Factors

Pollutant	Emission Factor (lb/10 ³ of abrasive sand used) ³
PM	27
PM ₁₀	13
PM _{2.5}	1.3

Emission Calculations

Pollutant	Emission Rate		Uncontrolled Emission Rate (tpy)
	lb/hr	tpy	
PM	0.56	0.78	0.78
PM ₁₀	0.27	0.38	0.38
PM _{2.5}	0.03	0.04	0.04

Facility-Wide Emissions Inventory

Rule Steel

Abrasive Blasting Emission Calculations

Speciated Emissions ⁴

Pollutant	CAS No.	Emission Limit (EL) Averaging Period ⁵	Weight Percent		Emission Rate		Averaged Hourly Emission Rate (lb/hr, averaged for EL)	Uncontrolled Emission Rate (tpy)
			Crushed Glass	Kleen Blast	lb/hr	tpy		
Aluminum Oxide	1344-28-1	Non-Carcinogenic	0%	5.7%	1.60E-02	2.23E-02	1.60E-02	0.02
Calcium Oxide	1305-78-8	Carcinogenic	0%	22.8%	0.064	0.09	0.06	0.09
Crystalline Silica	14808-60-7	Carcinogenic	0%	0.1%	2.81E-04	3.92E-04	2.81E-04	3.92E-04
Iron Oxide	1309-37-1	Carcinogenic	0%	27.4%	0.08	0.11	0.08	0.11
Magnesium Oxide	1309-48-4	Carcinogenic	0%	3.9%	1.10E-02	1.53E-02	1.10E-02	0.02
Silicates - Amorphous	112926-00-8	Non-Carcinogenic	100%	38.1%	0.39	0.54	0.39	0.54

Conversions

2000 lb/ton

Notes:

¹ Control efficiency of 0% even though activities occur within a partial enclosure. Partial enclosures can achieve 70% control based on data from the Air Pollution Engineering Manual, 2nd Ed., AWWMA, c2000, Ch 15, p. 694.

² Usage is based on projected maximum usage at the facility.

³ Emission factors for abrasive blasting are from AP-42 Chapter 13.2.6 - Abrasive Blasting.

⁴ <https://www3.epa.gov/ttn/chieff/ap42/ch13/final/c13s02-6.pdf>

Total PM emissions based on low wind speed (5 mph) due to partial enclosure at the site.

⁵ TAP/HAP emissions based on SDS information provided by Rule Steel.

Emission Limits for Idaho Toxic Air Pollutants (TAPs) is based on hourly averaged emission rates. For non-carcinogenic TAPs, the averaging period is 24 hours. For carcinogenic TAPs, the averaging period is annual.

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Facility-Wide Emissions Inventory Rule Steel

Heater Emission Calculations

Operational parameters	
Hours of operation	6000 hrs/yr

Propane Space Heaters	
Number of heaters	9 heaters
Rating ¹	170,000 BTU/hr
Propane Heating Value ²	91,500,000 BTU/10 ³ gal
Sulfur content ³	15 gr/100 ft ³

Emission Calculations

Pollutant	Emission Factor (lb/10 ³ gal) ⁴	Emission Rate	
		lb/hr	tpy
NO _x	13	0.22	0.65
CO	7.5	0.13	0.38
SO ₂	1.5	0.03	0.08
PM/PM ₁₀ /PM _{2.5}	0.7	0.01	0.04
VOC	1	0.02	0.05

Conversions

2000 lb/ton

Notes

- ¹ Maximum rating for heaters provided by client.
- ² Typical heating value for commercial grade propane from AP-42 Chapter 1.5 - Liquefied Petroleum Gas Combustion (07/08)
<https://www3.epa.gov/ttn/chieff/epa42/ch01/final/c01s05.pdf>
- ³ Sulfur content of propane from Engineering Data Handbook - 1994 (Figure 2-1).
- ⁴ Emission factors for propane from commercial boilers from AP-42 Chapter 1.5 - Liquefied Petroleum Gas Combustion (07/08).
SO₂ emission factor based on sulfur content of fuel.
Used total PM emission factor for PM, PM₁₀, and PM_{2.5}.
TOC emission factor in AP-42 Chapter assumed to be VOC.

Facility-Wide Emissions Inventory
Rule Steel

Heater GHG Emission Calculations

Operational parameters

Propane Space Heaters		
Number of heaters	9	heaters
Rating ¹	170,000	BTU/hr
Propane Heating Value ²	0.091	mmBTU/gal
Hours of operation	6000	hrs/yr
Total Potential Fuel Usage	9180	mmBTU/yr

Emission Calculations

Pollutant	Emission Factor (kg/mmBTU) ³	Global Warming Potential ⁴	Emission Rate tpy	CO ₂ e tpy
CO ₂	62.87	1	636.19	636.19
CH ₄	0.003	25	0.03	0.76
N ₂ O	0.0006	298	0.01	1.81
			Total tpy CO ₂ e:	638.76

Conversions

2000 lb/ton
1000000 BTU/mmBTU
2.2046 lb/kg

Notes

- ¹ Maximum rating for heaters provided by client.
- ² Default heating value for propane from 40 CFR Part 98 Subpart C - General Stationary Fuel Combustion Sources, Table C-1.
- ³ Emission factors from 40 CFR Part 98 Subpart C - General Stationary Fuel Combustion Sources, Tables C-1 (for propane) and C-2 (for petroleum).
- ⁴ EPA designated global warming potential (GWP)

Facility-Wide Emissions Inventory

Rule Steel

Grinding Emission Calculations

General Operational Parameters

Hours of Operation	24	hrs/day
	8760	hrs/year
Control Efficiency ¹	50%	

Electrode Usage

Welding Type	Max Usage by Welding Type	Electrode Type (by AWS Classification)	Max Usage ²
	lb/year		lb/year
Gas Metal Arc Welding (GMAW)	80,601	E70S	79,340
		E308L	1,261
Flux Cored Arc Welding (FCAW)	20,115	E71T	19,778
		E308LT	337
Shielded Metal Arc Welding (SMAW)	38,649	E6011	23,335
		E7024	7,292
		E7018	4,193
		E6010	3,828
		SUM==>	139,365

Grinding Emissions ³

Pollutant	Grinding Emission Factor ³		Emission Rate		Uncontrolled Emission Rate	
	lb/ton of metal removed	lb/lb of metal removed	lb/hr	tpy	lb/hr	tpy
PM/PM ₁₀ /PM _{2.5}	0.1	0.00005	0.00004	0.00001	0.0001	0.0000

Conversions

2000 lb/ton

Notes

¹ Control efficiency of

² Usage is based on projected maximum electrode usage at the facility.

³ Emission factor for PM produced during grinding activities are from AP-42 Table 12.5-1, Machine Scarfing, Assume 10% of welds are removed.

APPENDIX B – AMBIENT AIR QUALITY IMPACT ANALYSES

MEMORANDUM

DATE: December 6, 2018

TO: Rakael Pope, Permit Writer, Air Program

FROM: Darrin Mehr, Air Quality Analyst, Air Program

PROJECT: P-2017.0055 Project 61952 – Rule Steel Caldwell

SUBJECT: Demonstration of Compliance with IDAPA 58.01.01.203.02 (NAAQS) and 203.03 (TAPs) as it relates to air quality impact analyses.

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Acronyms, Units, and Chemical Nomenclature

AAC	Acceptable Ambient Concentration of a non-carcinogenic TAP
AACC	Acceptable Ambient Concentration of a Carcinogenic TAP
Appendix W	40 CFR 51, Appendix W – Guideline on Air Quality Models
BPIP	Building Profile Input Program
BRC	Below Regulatory Concern
CFR	Code of Federal Regulations
CMAQ	Community Multi-Scale Air Quality modeling system
CO	Carbon Monoxide
DEQ	Idaho Department of Environmental Quality
EI	Emissions Inventory
EL	Emissions Screening Level of a TAP
EPA	United States Environmental Protection Agency
Idaho Air Rules	Rules for the Control of Air Pollution in Idaho, located in the Idaho Administrative Procedures Act 58.01.01
lb/hr	Pounds per hour
NAAQS	National Ambient Air Quality Standards
NO ₂	Nitrogen Dioxide
NO _x	Oxides of Nitrogen
O ₃	Ozone
Pb	Lead
PM ₁₀	Particulate matter with an aerodynamic particle diameter less than or equal to a nominal 10 micrometers
PM _{2.5}	Particulate matter with an aerodynamic particle diameter less than or equal to a nominal 2.5 micrometers
ppb	parts per billion
PTC	Permit to Construct
PTE	Potential to Emit
REI	Ramboll-Environ, Inc. (permittee's consultant)
Rule Steel	Rule Steel, Inc. (permittee)
SIL	Significant Impact Level
SO ₂	Sulfur Dioxide
TAP	Toxic Air Pollutant
VOC	Volatile Organic Compounds
µg/m ³	Micrograms per cubic meter of air

1.0 Summary

Rule Steel, Inc. (Rule Steel) submitted a Permit to Construct (PTC) application for an initial facility-wide for their existing manufacturing facility near Caldwell, Idaho. This PTC will permit the existing facility and several on-going changes to the facility, including relocation of an existing paint spray booth, construction of another new paint spray booth, and construction of two buildings for metal fabrication processes. Project-specific air quality analyses involving atmospheric dispersion modeling of estimated emissions associated with the proposed modification were submitted to DEQ to demonstrate that emissions increases associated with proposed modification of operations would not cause or significantly contribute to a violation of any applicable ambient air quality standard as required by the Idaho Administrative Procedures Act 58.01.01.203.02 and 203.03 (Idaho Air Rules Section 203.02 and 203.03). This memorandum provides a summary of DEQ's review of the ambient air impact analyses submitted with the permit application.

Ramboll-Environ, Inc. (REI), on behalf of Rule Steel, prepared the PTC application and performed the ambient air impact analyses for this project to demonstrate compliance with applicable National Ambient Air Quality Standards (NAAQS) and Toxic Air Pollutant (TAP) increments. The DEQ review of submitted data and analyses summarized by this memorandum addressed only the rules, policies, methods, and data pertaining to the air impact analyses used to demonstrate that estimated emissions associated with operation of the facility will not cause or significantly contribute to a violation of any applicable air quality standard. This review did not address/evaluate compliance with other rules or analyses not pertaining to the air impact analyses. Evaluation of emissions estimates was the responsibility of the DEQ permit writer and is addressed in the main body of the DEQ Statement of Basis, and emissions calculation methods were not evaluated in this modeling review memorandum.

The submitted information and analyses: 1) showed either a) that estimated potential/allowable emissions are at a level defined as below regulatory concern (BRC) and do not require a NAAQS compliance demonstration, or b) that criteria pollutant emissions increases resulting from the proposed project are below site-specific modeling applicability thresholds, developed to assure that emissions below such levels will not result in ambient air impacts exceeding Significant Impact Levels (SILs); 2) showed that TAP emissions increases associated with the project will not result in increased ambient air impacts exceeding allowable TAP increments.

Table 1 presents key assumptions and results to be considered in the development of the permit.

Idaho Air Rules require air impact analyses be conducted in accordance with methods outlined in 40 CFR 51, Appendix W *Guideline on Air Quality Models* (Appendix W). Appendix W requires that air quality impacts be assessed using atmospheric dispersion models with emissions and operations representative of design capacity or as limited by a federally enforceable permit condition. The submitted information and analyses demonstrated to the satisfaction of the Department that operation of the proposed project will not cause or significantly contribute to a violation of any ambient air quality standard, provided the key conditions in Table 1 are representative of facility design capacity or operations as limited by a federally enforceable permit condition. The DEQ permit writer should use Table 1 and other information presented in this memorandum to generate appropriate permit provisions/restrictions to assure the requirements of Appendix W are met regarding emissions representative of design capacity or permit allowable rates.

Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSES	
Criteria/Assumption/Result	Explanation/Consideration
General Emissions Rates. Emissions rates used in the air impact analyses, as listed in this memorandum, must represent maximum potential emissions as given by design capacity, inherently limited by the nature of the process or configuration of the facility, or as limited by the issued permit for the specific pollutant and averaging period.	Compliance has not been demonstrated for emissions rates greater than those used in the air impact analyses.
TAP Emissions Sources. TAP emissions sources, as constructed and operated, must be accurately represented by the analyses submitted with the PTC application.	Important parameters include release point locations and release heights.
<p>Post Public Comment Period Changes to Plasma Cutting Operations</p> <p>The permittee has requested an increase in the quantity of stainless steel throughput on an annual basis. Nickel emissions are attributed primarily to the plasma arc cutting process and secondarily, to welding emissions. All plasma cutting emissions are passively vented from eight doorways in the plasma cutting building. Welding emissions and material throughputs were not altered.</p> <p>DEQ applied a simplistic approach and increased the stainless steel throughput using the emission inventory percentage as a baseline. The baseline 5% total stainless steel throughput was increased by the current approved emissions for this project.</p> <p>See Section 4.3 of this memorandum to review a discussion on how this change was evaluated.</p>	<p>Criteria air pollutant emissions will not increase as a result of this adjustment, so the project still qualifies for a BRC exemption from NAAQS compliance requirements.</p> <p>Installation of the proposed filtration system and operation during all plasma arc cutting operations is necessary to reduce particulate matter and particulate TAP emissions to the rates used to establish compliance with NAAQS and the nickel TAP increment.</p> <p>The throughput of stainless steel for the plasma cutting building may be increased to approximately 14.3% of the total steel throughput on an annual basis.</p>

Summary of Submittals and Actions

- September 27, 2017: REI submitted a modeling protocol on behalf of Rule Steel.
- October 10, 2017: DEQ issued a modeling protocol approval letter for the project.
- October 31, 2017: REI submitted a PTC application to DEQ, on behalf of Rule Steel.
- December 1, 2017: DEQ declared the application incomplete.
- May 1, 2018: DEQ downloaded revised modeling files created by REI on behalf of Rule Steel.
- June 19, 2018: DEQ received a revised emissions inventory and modeling report from REI on behalf of Rule Steel.
- June 25, 2018: DEQ received revised modeling files from REI on behalf of Rule Steel.
- August 10, 2018: DEQ issued a facility draft permit package to Rule Steel.
- September 20, 2018: REI submitted facility draft comments via email to DEQ, including requested revisions to the PTC and a revised EI. Plasma cutting hours of operation were increased and air filtration collection and control systems were added to the facility's requested operations and emissions inventory. REI's information includes a revised emissions control level of 99.95% for PM_{2.5}/PM₁₀, and nickel emitted as particulate matter. This memorandum has been altered to reflect the revised emissions rates submitted with the Rule Steel/REI facility draft comments.
- October 5, 2018: REI submitted additional information confirming plasma cutting emissions collected and controlled by proposed air filtration systems within the plasma cutting building exhaust directly into the building interior. The proposed filtration system is not designed with vents

- October 23, 2018: exhausting directly to the atmosphere. A 30-day public comment period on the proposed PTC and Statement of Basis started.
- November 22, 2018: The 30-day public comment period concluded.
- November 28, 2018: DEQ permitting staff, Rule Steel, and REI participated in a conference call to discuss an alteration to the PTC.
- November 28, 2018: REI submitted an emission calculation spreadsheet, via email, to support a request to increase stainless steel throughput for the plasma cutting operation.

2.0 Background Information

Background information on the project and the air impact analyses was provided in the Modeling Analysis Report submitted with the application.

2.1 Air Impact Analyses Required for All Permits to Construct

Idaho Air Rules Sections 203.02 and 203.03:

No permit to construct shall be granted for a new or modified stationary source unless the applicant shows to the satisfaction of the Department all of the following:

02. NAAQS. *The stationary source or modification would not cause or significantly contribute to a violation of any ambient air quality standard.*

03. Toxic Air Pollutants. *Using the methods provided in Section 210, the emissions of toxic air pollutants from the stationary source or modification would not injure or unreasonably affect human or animal life or vegetation as required by Section 161. Compliance with all applicable toxic air pollutant carcinogenic increments and toxic air pollutant non-carcinogenic increments will also demonstrate preconstruction compliance with Section 161 with regards to the pollutants listed in Sections 585 and 586.*

Atmospheric dispersion modeling, using computerized simulations, is used to demonstrate compliance with both NAAQS and TAPs. Idaho Air Rules Section 202.02 states:

02. Estimates of Ambient Concentrations. *All estimates of ambient concentrations shall be based on the applicable air quality models, data bases, and other requirements specified in 40 CFR 51 Appendix W (Guideline on Air Quality Models).*

2.2 Significant Impact Level and Cumulative NAAQS Impact Analyses

The Significant Impact Level (SIL) analysis for a new facility or proposed modification to a facility involves modeling estimated criteria air pollutant emissions from the facility or modification to determine the potential impacts to ambient air. Air impact analyses are required by Idaho Air Rules to be conducted in accordance with methods outlined in 40 CFR 51, Appendix W (Guideline on Air Quality Models).

Appendix W requires that facilities be modeled using emissions and operations representative of design capacity or as limited by a federally enforceable permit condition.

A facility or modification is considered to have a significant impact on air quality if maximum modeled

impacts to ambient air exceed the established SIL listed in Idaho Air Rules Section 006 (referred to as a “significant contribution” in Idaho Air Rules) or as incorporated by reference as per Idaho Air Rules Section 107.03.b. Table 2 lists the applicable SILs.

If modeled maximum pollutant impacts to ambient air from the emissions sources associated with a new facility or modification exceed the SILs, then a cumulative NAAQS impact analysis is necessary to demonstrate compliance with NAAQS and Idaho Air Rules Section 203.02.

A cumulative NAAQS impact analysis for attainment area pollutants involves assessing ambient impacts (typically the design values consistent with the form of the standard) from facility-wide potential/allowable emissions, and emissions from any nearby co-contributing sources, and then adding a DEQ-approved background concentration value to the modeled result that is appropriate for the criteria pollutant/averaging-period at the facility location and the area of significant impact. The resulting pollutant concentrations in ambient air are then compared to the NAAQS listed in Table 2. Table 2 also lists SILs and specifies the modeled design value that must be used for comparison to the NAAQS. NAAQS compliance is evaluated on a receptor-by-receptor basis for the modeling domain.

If the cumulative NAAQS impact analysis indicates a violation of the standard, the permit may not be issued if the proposed project has a significant contribution (exceeding the SIL) to the modeled violation. If project-specific impacts are below the SIL, then the project does not have a significant contribution to the specific violations.

2.3 Toxic Air Pollutant Analyses

Emissions of toxic substances are generally addressed by Idaho Air Rules Section 161:

Any contaminant which is by its nature toxic to human or animal life or vegetation shall not be emitted in such quantities or concentrations as to alone, or in combination with other contaminants, injure or unreasonably affect human or animal life or vegetation.

Permitting requirements for toxic air pollutants (TAPs) from new or modified sources are specifically addressed by Idaho Air Rules Section 203.03 and require the applicant to demonstrate to the satisfaction of DEQ the following:

Using the methods provided in Section 210, the emissions of toxic air pollutants from the stationary source or modification would not injure or unreasonably affect human or animal life or vegetation as required by Section 161. Compliance with all applicable toxic air pollutant carcinogenic increments and toxic air pollutant non-carcinogenic increments will also demonstrate preconstruction compliance with Section 161 with regards to the pollutants listed in Sections 585 and 586.

Table 2. APPLICABLE REGULATORY LIMITS				
Pollutant	Averaging Period	Significant Impact Levels^a (µg/m³)^b	Regulatory Limit^c (µg/m³)	Modeled Design Value Used^d
PM ₁₀ ^e	24-hour	5.0	150 ^f	Maximum 6 th highest ^g
PM _{2.5} ^h	24-hour	1.2	35 ⁱ	Mean of maximum 8 th highest ^j
	Annual	0.2	12 ^k	Mean of maximum 1 st highest ^l
Carbon monoxide (CO)	1-hour	2,000	40,000 ^m	Maximum 2 nd highest ⁿ
	8-hour	500	10,000 ^m	Maximum 2 nd highest ⁿ
Sulfur Dioxide (SO ₂)	1-hour	3 ppb ^o (7.8 µg/m ³)	75 ppb ^p (196 µg/m ³)	Mean of maximum 4 th highest ^q
	3-hour	25	1,300 ^m	Maximum 2 nd highest ⁿ
	24-hour	5	365 ^m	Maximum 2 nd highest ⁿ
	Annual	1.0	80 ^r	Maximum 1 st highest ⁿ
Nitrogen Dioxide (NO ₂)	1-hour	4 ppb (7.5 µg/m ³)	100 ppb ^s (188 µg/m ³)	Mean of maximum 8 th highest ^t
	Annual	1.0	100 ^r	Maximum 1 st highest ⁿ
Lead (Pb)	3-month ^u	NA	0.15 ^r	Maximum 1 st highest ⁿ
	Quarterly	NA	1.5 ^r	Maximum 1 st highest ⁿ
Ozone (O ₃)	8-hour	40 TPY VOC ^v	70 ppb ^w	Not typically modeled

^a Idaho Air Rules Section 006 (definition for significant contribution) or as incorporated by reference as per Idaho Air Rules Section 107.03.b.

^b Micrograms per cubic meter.

^c Incorporated into Idaho Air Rules by reference, as per Idaho Air Rules Section 107.

^d The maximum 1st highest modeled value is always used for the significant impact analysis unless indicated otherwise. Modeled design values are calculated for each ambient air receptor.

^e Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.

^f Not to be exceeded more than once per year on average over 3 years.

^g Concentration at any modeled receptor when using five years of meteorological data.

^h Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.

ⁱ 3-year mean of the upper 98th percentile of the annual distribution of 24-hour concentrations.

^j 5-year mean of the 8th highest modeled 24-hour concentrations at the modeled receptor for each year of meteorological data modeled. For the SIL analysis, the 5-year mean of the 1st highest modeled 24-hour impacts at the modeled receptor for each year.

^k 3-year mean of annual concentration.

^l 5-year mean of annual averages at the modeled receptor.

^m Not to be exceeded more than once per year.

ⁿ Concentration at any modeled receptor.

^o Interim SIL established by EPA policy memorandum.

^p 3-year mean of the upper 99th percentile of the annual distribution of maximum daily 1-hour concentrations.

^q 5-year mean of the 4th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year mean of 1st highest modeled 1-hour impacts for each year is used.

^r Not to be exceeded in any calendar year.

^s 3-year mean of the upper 98th percentile of the annual distribution of maximum daily 1-hour concentrations.

^t 5-year mean of the 8th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year mean of maximum modeled 1-hour impacts for each year is used.

^u 3-month rolling average.

^v An annual emissions rate of 40 ton/year of VOCs is considered significant for O₃.

^w Annual 4th highest daily maximum 8-hour concentration averaged over three years.

Per Section 210, if the total project-wide emissions increase of any TAP associated with a new source or modification exceeds screening emission levels (ELs) of Idaho Air Rules Section 585 or 586, then the ambient impact of the emissions increase must be estimated. If ambient impacts are less than applicable Acceptable Ambient Concentrations (AACs) for non-carcinogens of Idaho Air Rules Section 585 and Acceptable Ambient Concentrations for Carcinogens (AACCs) of Idaho Air Rules Section 586, then compliance with TAP requirements has been demonstrated.

Idaho Air Rules Section 210.20 states that if TAP emissions from a specific source are regulated by the

Department or EPA under 40 CFR 60, 61, or 63, then a TAP impact analysis under Section 210 is not required for that TAP.

3.0 Analytical Methods and Data

The submitted modeling report provides a detailed discussion of the methods and data used to demonstrate compliance with applicable standards. The purpose of the application was to issue a facility-wide PTC for existing operations. There are no proposed physical changes to the facility.

3.1 Emission Source Data

Emissions increases of criteria pollutants and TAPs resulting from the proposed project were estimated by REI for various applicable averaging periods.

Emissions rates used in the dispersion modeling analyses, as listed in this memorandum, should be reviewed by the DEQ permit writer and compared with those in the final emissions inventory. All modeled criteria air pollutant and TAP emissions rates must be equal to or greater than the modification's potential emissions increase calculated in the PTC emissions inventory or proposed permit allowable emissions rates.

3.1.1 Modeling Applicability and Modeled Criteria Pollutant Emissions Rates

If project-specific emission increases for criteria pollutants would qualify for a below regulatory concern (BRC) permit exemption as per Idaho Air Rules Section 221 if it were not for potential emissions of one or more pollutants exceeding the BRC threshold of 10 percent of emissions defined by Idaho Air Rules as significant, then a NAAQS compliance demonstration may not be required for those pollutants with emissions below BRC levels. DEQ's regulatory interpretation policy of exemption provisions of Idaho Air Rules is that: "A DEQ NAAQS compliance assertion will not be made by the DEQ modeling group for specific criteria pollutants having a project emissions increase below BRC levels, provided the proposed project would have qualified for a Category I Exemption for BRC emissions quantities except for the emissions of another criteria pollutant."¹ The interpretation policy also states that the exemption criteria of uncontrolled potential to emit (PTE) not to exceed 100 ton/year (Idaho Air Rules Section 220.01.a.i) is not applicable when evaluating whether a NAAQS impact analyses is required. A permit will be issued limiting PTE below 100 ton/year, thereby negating the need to maintain calculated uncontrolled PTE under 100 ton/year. The BRC exemption cannot be used to exempt a project from a pollutant-specific NAAQS compliance demonstration in cases where a PTC is required for the action regardless of emissions quantities, such as the modification of an existing emissions or throughput limit.

A NAAQS compliance demonstration must be performed for pollutant increases that would not qualify for the BRC exemption from the requirement to demonstrate compliance with NAAQS. NAAQS compliance demonstrations were not required for this project since the submitted application demonstrated that the project qualified for the BRC NAAQS compliance demonstration exemption.

Site-specific air impact modeling analyses may not be necessary for some pollutants, even where such emissions do not qualify for the BRC exemption. DEQ has developed modeling applicability thresholds, below which a site-specific modeling analysis is not required. DEQ generic air impact modeling analyses that were used to develop the modeling thresholds provide a conservative SIL analysis for projects with emissions below identified threshold levels. Project-specific modeling applicability thresholds are

provided in the *Idaho Air Modeling Guideline*². These thresholds were based on assuring an ambient impact of less than the established SIL for specific pollutants and averaging periods.

If project-specific total emissions rate increases of a pollutant are below Level I Modeling Applicability Thresholds, then project-specific air impact analyses are not necessary for permitting. Use of Level II Modeling Applicability Thresholds are conditional, requiring DEQ approval. DEQ approval is based on dispersion-affecting characteristics of the emissions sources such as stack height, stack gas exit velocity, stack gas temperature, distance from sources to ambient air, presence of elevated terrain, and potential exposure to sensitive public receptors.

Use of Modeling Applicability Thresholds were not used by REI since NAAQS compliance demonstrations were not required because total facility-wide emissions were below BRC levels. Table 3 provides a comparison between facility-wide allowable emissions and BRC levels.

Table 3. NAAQS COMPLIANCE DEMONSTRATION APPLICABILITY ANALYSIS RESULTS			
Pollutant	Annual Allowable Emissions^a (tons/year)	BRC Level (tons/year)	NAAQS Compliance Demonstration Required
PM _{2.5}	0.57	1.0	No
PM ₁₀	0.91	1.5	No
NO _x	3.99	4	No
CO	0.38	10	No
SO ₂	0.08	4	No
Pb	1.04E-04	0.06	No

^a. As stated in the application materials.

Ozone (O₃) differs from other criteria pollutants in that it is not typically emitted directly into the atmosphere. O₃ is formed in the atmosphere through reactions of VOCs, NO_x, and sunlight. Atmospheric dispersion models used in stationary source air permitting analyses cannot be used to estimate O₃ impacts resulting from VOC and NO_x emissions from an industrial facility. O₃ concentrations resulting from area-wide emissions are predicted by using more complex airshed models such as the Community Multi-Scale Air Quality (CMAQ) modeling system. Use of the CMAQ model is very resource intensive and DEQ asserts that performing a CMAQ analysis for a particular permit application is not typically a reasonable or necessary requirement for air quality permitting. Addressing secondary formation of O₃ within the context of permitting a new stationary source has been somewhat addressed in EPA regulation and policy. As stated in a letter from Gina McCarthy of EPA to Robert Ukeiley, acting on behalf of the Sierra Club (letter from Gina McCarthy, Assistant Administrator, United States Environmental Protection Agency, to Robert Ukeiley, January 4, 2012):

... footnote 1 to sections 51.166(I)(5)(I) of the EPA's regulations says the following: "No de minimis air quality level is provided for ozone. However, any net emission increase of 100 tons per year or more of volatile organic compounds or nitrogen oxides subject to PSD would be required to perform an ambient impact analysis, including the gathering of air quality data."

The EPA believes it unlikely a source emitting below these levels would contribute to such a violation of the 8-hour ozone NAAQS, but consultation with an EPA Regional Office should still be conducted in accordance with section 5.2.1.c. of Appendix W when reviewing an application for sources with emissions of these ozone precursors below 100 TPY."

DEQ determined it was not appropriate or necessary to require a quantitative source specific O₃ impact analysis because allowable emissions estimates of VOCs and NO_x are below the 100 tons/year threshold.

Secondary Particulate Formation

The impact from secondary particulate formation resulting from emissions of NO_x, SO₂, and/or VOCs was assumed by DEQ to be negligible based on the magnitude of emissions and the short distance from emissions sources to locations where maximum PM₁₀ and PM_{2.5} impacts are anticipated.

3.1.2 Toxic Air Pollutant Emissions Rates

TAP emissions regulations under Idaho Air Rules Section 210 are only applicable to new or modified sources constructed after July 1, 1995.

Table 4 provides a summary of TAP emissions increases for the project for those TAPs that had an increase exceeding the ELs of Idaho Air Rules Section 585 or 586. Tables 5 and 6 lists source-specific emissions of non-carcinogenic and carcinogenic TAPs, respectively, used in the impact analyses.

Table 4. TAP EMISSIONS INCREASES THAT TRIGGER MODELING		
Toxic Air Pollutant	Emissions (lb/hr)^a	Screening Emissions Level (lb/hr)
Dibutyl phthalate ^b	1.76	0.333
Heptano-2-one (2-heptanone, see methyl n-amyl ketone) ^b	52.4	15.7
o-Xylene & Xylene (aggregated emission rates) ^b	45.92	29
Naphthalene (as a carcinogen) ^{c, d}	3.7E-03	9.1E-05
Nickel ^c	1.20E-04	2.7E-05

^a. Pounds per hour.

^b. Non-carcinogenic TAP. ELs are daily maximum emissions expressed as pounds/hour. The emissions rate is the daily emissions divided by 24 hours/day.

^c. Carcinogenic TAP. ELs are annual maximum emissions expressed as pounds/hour. The emissions rate is the annual emissions divided by 8,760 hours/year.

^d. DEQ-required treatment of naphthalene as a carcinogenic polyaromatic hydrocarbon (PAH).

Table 5. MODELED EMISSIONS RATES FOR NONCARCINOGENIC TOXIC AIR POLLUTANTS				
Source ID	Source Description	Emissions Rates (pounds/hour)		
		Dibutyl phthalate	Heptano-2-one	o-Xylene & Xylene
PAINTSTK1	Paint booth 1 – Stack 1	0.44	13.10	11.90
PAINTSTK2	Paint booth 1 – Stack 2	0.44	13.10	11.90
PAINTSTK3	Paint booth 2 – Stack 1	0.44	13.10	11.90
PAINTSTK4	Paint booth 2 – Stack 2	0.44	13.10	11.90

^a. 24-hour average emissions rate in pounds per hour.

Table 6. MODELED EMISSIONS RATES FOR CARCINOGENIC^a TOXIC AIR POLLUTANTS

Source ID	Source Description	Emissions Rates (pounds/hour)	
		Naphthalene	Nickel
PAINTSTK1	Paint booth 1 – Stack 1	9.21E-04	--
PAINTSTK2	Paint booth 1 – Stack 2	9.21E-04	--
PAINTSTK3	Paint booth 2 – Stack 1	9.21E-04	--
PAINTSTK4	Paint booth 2 – Stack 2	9.21E-04	--
DIAMSHOP1	Diamond Z shop door 1	--	7.94E-07
DIAMSHOP2	Diamond Z shop door 2	--	7.94E-07
DIAMSHOP3	Diamond Z shop door 3	--	7.94E-07
DIAMSHOP4	Diamond Z shop door 4	--	7.94E-07
DIAMSHOP5	Diamond Z shop door 5	--	7.94E-07
DIAMSHOP6	Diamond Z shop door 6	--	7.94E-07
DIAMSHOP7	Diamond Z shop door 7	--	7.94E-07
DIAMSHOP8	Diamond Z shop door 8	--	7.94E-07
DIAMSHOP9	Diamond Z shop door 9	--	7.94E-07
DIAMSHOP10	Diamond Z shop door 10	--	7.94E-07
DIAMSHOP11	Diamond Z shop door 11	--	7.94E-07
DIAMSHOP12	Diamond Z shop door 12	--	7.94E-07
DIAMSHOP13	Diamond Z shop door 13	--	7.94E-07
DIAMSHOP14	Diamond Z shop door 14	--	7.94E-07
DIAMSHOP15	Diamond Z shop door 15	--	7.94E-07
STRUSHOP1	Structural steel shop door 1	--	7.94E-07
STRUSHOP2	Structural steel shop door 2	--	7.94E-07
STRUSHOP3	Structural steel shop door 3	--	7.94E-07
STRUSHOP4	Structural steel shop door 4	--	7.94E-07
STRUSHOP5	Structural steel shop door 5	--	7.94E-07
STRUSHOP6	Structural steel shop door 6	--	7.94E-07
CONTSHOP1	Container shop door 1	--	7.94E-07
CONTSHOP2	Container shop door 2	--	7.94E-07
CONTSHOP3	Container shop door 3	--	7.94E-07
CONTSHOP4	Container shop door 4	--	7.94E-07
CONTSHOP5	Container shop door 5	--	7.94E-07
CONTSHOP6	Container shop door 6	--	7.94E-07
CONTSHOP7	Container shop door 7	--	7.94E-07
PLASMASHOP1	Plasma cutting shop door 1	--	3.21E-05 ^b (1.12E-05) ^c
PLASMASHOP2	Plasma cutting shop door 2	--	3.21E-05 ^b (1.12E-05) ^c
PLASMASHOP3	Plasma cutting shop door 3	--	3.21E-05 ^b (1.12E-05) ^c
PLASMASHOP4	Plasma cutting shop door 4	--	3.21E-05 ^b (1.12E-05) ^c
PLASMASHOP5	Plasma cutting shop door 5	--	3.21E-05 ^b (1.12E-05) ^c
PLASMASHOP6	Plasma cutting shop door 6	--	3.21E-05 ^b (1.12E-05) ^c
PLASMASHOP7	Plasma cutting shop door 7	--	3.21E-05 ^b (1.12E-05) ^c
PLASMASHOP8	Plasma cutting shop door 8	--	3.21E-05 ^b (1.12E-05) ^c
RAILSHOP1	Handrail shop door 1	--	7.94E-07
RAILSHOP2	Handrail shop door 2	--	7.94E-07
RAILSHOP3	Handrail shop door 3	--	7.94E-07
TANKSHOP1	Tank shop door 1	--	7.94E-07
TANKSHOP2	Tank shop door 2	--	7.94E-07

Table 6. MODELED EMISSIONS RATES FOR CARCINOGENIC^a TOXIC AIR POLLUTANTS			
Source ID	Source Description	Emissions Rates (pounds/hour)	
		Naphthalene	Nickel
TANKSHOP3	Tank shop door 3	--	7.94E-07
TANKSHOP4	Tank shop door 4	--	7.94E-07
TANKSHOP5	Tank shop door 5	--	7.94E-07
TANKSHOP6	Tank shop door 6	--	7.94E-07
TANKSHOP7	Tank shop door 7	--	7.94E-07

^a The emissions rate is the total annual emissions divided by 8,760 hours/year for carcinogenic TAPs.

^b Submitted modeling demonstration modeled this emission rate. This emission rate and the emission rate listed under footnote "c" were used to create a linear scaling factor.

^c September 20, 2018 revised emission rate. This rate is lower than included in Rule Steel's modeling demonstration, so modeled impacts are conservative.

3.1.3 DEQ Review

DEQ determined the following from review of the Air Modeling Analysis Report submitted with the application:

- The appropriate atmospheric dispersion model was used for the proposed project.
- The Rule Steel facility was properly represented in the model, regarding geographical location, terrain, structures, emission point locations, and areas of potential exposure.
- Appropriate meteorological data were used with the dispersion model.
- Appropriate averaging periods were selected for model output, corresponding to the form of applicable standards.
- The modeling report indicates that all TAPs with project-wide emissions increases above the ELs of Idaho Air Rules Section 585 and 586 were modeled to evaluate compliance with applicable AACs and AACCs.
- Through review of the submitted Air Modeling Analysis Report, it appears that the TAPs air impact analyses were performed using recommended data and methods prescribed in the *Idaho Air Quality Modeling Guideline*¹.

DEQ determined the review of the air impact analyses, as described above, was adequate to provide assurance that the proposed project will not result in increases in ambient air TAP levels that exceeded the specific AACs or AACCs. This conclusion is based on the general type and magnitude of the facility, the types of methods and data used in the analyses, and the modeled results in comparison to applicable AACs/AACCs.

4.0 NAAQS and TAPs Air Impact Modeling Results

4.1 Results for NAAQS Analyses

A NAAQS compliance demonstration was not required for permit issuance because facility-wide emissions of criteria pollutants were below BRC levels.

4.2 Results for TAPs Impact Analyses

Table 7 lists the maximum modeled impacts for specific TAPs. All modeled impacts are below applicable AACs and AACCs.

Table 7. TAP AIR IMPACT ANALYSIS RESULTS				
TAP	Averaging Period	Maximum Modeled Impact ($\mu\text{g}/\text{m}^3$) ^a	AAC or AACC ($\mu\text{g}/\text{m}^3$)	Percent of AAC/AACC
Dibutyl phthalate ^b	24-hour	24.94	250	10%
Heptano-2-one ^b	24-hour	741.34	11,750	6%
o-Xylene & Xylene ^b	24-hour	673.94	21,750	3%
Naphthalene (as a carcinogen) ^c	Annual	0.01375	0.014	98%
Nickel ^c	Annual	<0.00357 ^d	0.0042	<85% ^d

a. Micrograms per cubic meter.

b. Non-carcinogenic TAP. Modeled impact and AAC represent a 24-hour averaged concentration.

c. Carcinogenic TAP. Modeled impact and AACC represent an 8,760-hour averaged concentration.

d. Rule Steel did not revise the ambient impact analyses to account for reduced emission rates of nickel originating in facility draft comments, edits, and emission control equipment and material throughput change requests. The final ambient impact will remain below this maximum impact.

4.3 Revision to Plasma Cutting Stainless Steel Throughput

The permittee requested an increase in the quantity of stainless steel annual throughput on October 28, 2018, which is after the public comment period closed. Air impact modeling analyses described in this memorandum were based on most-recent modeling files and associated data submitted on June 25, 2018. Maximum modeled impacts of the TAP nickel were 85% of the allowable TAP increment.

An October 5, 2018, project addendum raised the overall plasma arc cutting carbon steel and stainless steel throughputs while reducing plasma arc cutting nickel emissions to nearly one third of the original modeled emission rates. This adjustment was made without the need to revise the impact modeling because Rule Steel also proposed an emission collection and filtration emission control system. The nickel emission rates are contained in Table 6 of this memorandum.

Emission rates for plasma arc cutting were reduced in a change to the emission inventory reflecting a collection and emission control system, which offset an emission increase due to additional operating hours and material throughput for the plasma cutting tables. These changes resulted in plasma arc cutting emissions that were nearly 1/3 of the modeled emission rates in the June 25, 2018, modeling demonstration. Because particulate matter and particulate TAP emissions—including nickel—were reduced, the changes adequately demonstrated compliance with the nickel TAP increment without revisions to the air impact modeling analyses submitted on June 25, 2018.

A total of 89.5% of the June 25, 2018 modeled nickel emissions were attributed to the eight individual elevated volume sources at a single plasma arc cutting building. The remaining 10.5% of the nickel sources were attributed to 38 other elevated volume sources at five separate buildings, each modeled with an identical nickel emission rate. DEQ concluded the plasma arc cutting source would be the dominant contributor to the ambient impacts. Since this conclusion was not supported by any culpability analyses to verify the contribution of plasma arc cutting to the design impact, maintaining nickel emissions only to those used in the submitted impact analyses (resulting in a maximum nickel impact at 85% of the TAP

increment) was necessary. Also, an increase in modeled emissions above what was used in the submitted analyses could be considered beyond the scope of the application and substantially different from what was provided for public comment.

The submitted air impact modeling files and modeling report were based on 5% stainless steel and 95% carbon steel processing through the two plasma cutting tables. Carbon and stainless steel cutting processes each have unique material removal rates, cutting speed rates, and most importantly nickel content, which all directly affect estimated emission rates. Nickel content is 40.6 times greater in stainless steel than carbon steel in the submitted emission inventory.

Modeling staff concluded that based solely on the project's existing documentation for the air impact modeling analyses, a very simplistic linear relationship approach could be accommodated to increase the percentage of stainless steel throughput on the basis of percent of total throughput. Additional documentation regarding the relationship of carbon steel processing emissions was not considered, and DEQ concludes the final impacts will comply with the nickel increment at 85% or less.

The baseline stainless steel annual throughput fraction of 5% of the total material processed was scaled by the ratio of the plasma arc cutting nickel emission rate without filtration controls (which were the basis of the modeling demonstration's ambient impact) to the plasma arc cutting nickel emission rate reflecting the filtration system.

As presented in Table 6, each of the eight doorways modeled for the plasma arc cutting building was modeled with an identical emission rate of 3.21E-05 lb/hr of nickel uncontrolled, and emissions of 1.21E-05 lb/hr were estimated for the filtration system-controlled scenario.

The scaling factor is determined by dividing 3.21E-05 lb/hr (originally modeled rate) by 1.12E-05 lb/hr (controlled emissions), for a factor of 2.87 to apply to the increase in allowable stainless steel throughput at that plasma cutting tables. The increase to the baseline 5% stainless throughput

$$(2.87) * (5\% \text{ Stainless Steel}) = 14.3\% \text{ Stainless Steel}$$

The permit writer may apply this percentage of stainless throughput in the requested increase.

5.0 Conclusions

The information submitted with the PTC application demonstrated to DEQ's satisfaction that applicable emissions resulting from the Rule Steel facility will not cause or significantly contribute to a violation of any ambient air quality standard or TAP increment.

References

1. *State of Idaho Guideline for Performing Air Quality Impact Analyses*. Idaho Department of Environmental Quality. September 2013. State of Idaho DEQ Air Doc. ID AQ-011. Available at <http://www.deq.idaho.gov/media/1029/modeling-guideline.pdf>.

APPENDIX C – FACILITY DRAFT COMMENTS

The following comments were received from the facility on September 20, 2018:

Facility Comment:

1. Increase hours of operation for plasma cutting. A careful review of the draft permit indicates the limit on plasma cutting operations unnecessarily constrains operations and needs to be updated for potential future operations. Rule Steel requests plasma cutting operations be limited to 6,100 hours per year of operation. This level is representative of current volume and allows for expected growth in operations.

2. Air filters controlling plasma cutting emissions. Rule Steel plans to install up to 14 air filtration systems that will control particulate matter emissions from plasma cutting by more than 95 percent. Additional information on the air filtration systems and a summary of attachments to this email are provided below.

- Each air filtration system will handle over 6,000 cfm of air from the cutting building through two filters (CI Sure Shield MERV-11 filter and Defiant MERV-15 filter). Literature on control efficiencies for both filters are attached to this email, and indicate particulate matter control efficiencies greater than 95% for small particulate and greater than 95 percent for PM10.
- The addition of an air filtration system will reduce particulate matter and toxic air pollutant (TAP) emissions from plasma cutting operations. Therefore, no additional modeling is necessary to incorporate the air filtration system.
- Updated Idaho DEQ forms for the plasma cutting tables and an updated emission inventory are attached to this email.
- Rule Steel has proposed additional permit conditions for the operation and maintenance of the filtration systems in the draft PTC.

3. Requirement for closed doors. This proposal is unrepresentative of normal operations and cannot be implemented continuously by Rule Steel. Doors are closed for quality and certification purposes during welding; however the 1-hour delay to move product is unworkable. Rule Steel requests Idaho DEQ remove Conditions 2.9 and 3.5 (1-Hour Closed Door Requirement) based on the fact the proposed air filtration system will provide a higher level of control for plasma cutting activities and the roll-up doors are closed during welding activities in order to perform high-quality welding according to the American Welding Society (AWS) and American Society of Mechanical Engineering (ASME) codes. These codes impose strict limitations on wind disturbance within a welding environment. The requirements prevent wind from evacuating the shielding gas (i.e., carbon dioxide or argon) used to protect the weld area from oxygen and water vapor. This practice ensures high-quality welds. Rule Steel has four AWS-certified weld inspectors that routinely verify weld quality and the operating environment across the facility. Inspections include checking dew points and air movement during welding operations. No welding can occur when the building doors are open to ensure conformity with these applicable codes.

4. Propane Heater Usage. The initial PTC application assumed continuous propane heater usage (8,760 hours per year), but actual propane needs are much lower based on seasonal requirements for worker comfort heating. Based on past operations, we have assumed a maximum of 6,000 hours per year of operation.

DEQ Response: The emission inventory and PTE tables in the Statement of Basis were updated. Added the new AZTech filtration system to the Control Devices sections of permit Tables 1.1 and 2.1. Increased Abrasive Blasting permit limits, accordingly. Added permit conditions for the filtration system and filtration system O&M manual. The Welding closed door requirement was updated.

Facility Comment:

5. Alternative Daily Coating Usage. Draft PTC Condition 5.14 contains language requiring TAP content to be based on 1% of the coating density for TAPs that were not detected in the coating or 100% of the coating density when information on the TAP is not available. These assumptions would result in unreasonable TAP emission estimates from alternative coatings. For TAPs that are not measurable in a coating (i.e., not detected), assuming mass concentration is not reasonable. Idaho DEQ's approach may be more reasonable for TAPs that were measurable but below the method detection limit. However, Rule Steel requests the draft permit language be removed for TAPs that are not measurable in an alternative coating.

DEQ Response: The Alternate Daily Coating Usage Scenario permit option has been developed by DEQ was included in this permit to provide the facility added flexibility for qualifying new or different coatings that are not listed in the facility's current permit. DEQ has determined that qualification of TAPs using the methodology listed in the Alternate Daily Coating Usage Scenario section ensures compliance with Idaho Air Rules TAPs requirements specified in IDAPA 58.01.01. 210, 585, and 586. Alternatively, the facility may also submit a new PTC application to qualify and incorporate new coatings into its permit.

Facility Comment: The facility requested changing Emission Points in Operation Description Tables 2.1, 3.1 and 4.1 in Plasma Cutting, Welding, and Abrasive Blasting permit sections to fugitive emissions.

DEQ Response: These sections are left unchanged since emissions from these operations do not meet the definition of fugitive emissions in IDAPA 58.01.01.006(47): *Those emissions which could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening.*

Facility Comment: Table 5.2 Emission limit for Individual TAP (T/yr) updated to 8.03: Updated for Xylene calculation. Also the facility added corrections to incorrect Table 5.2 footnote (f) references.

DEQ Response: Corrected Table 5.2 emission limits from T/yr to lb/day to for consistency with calculations methods described in Permit Condition 5.16. This is consistent with use of the Alternate Daily Coating Usage Scenario.

Facility Comment: The facility added "equivalent coating(s)" to original wording "approved coatings".

DEQ Response: Use of the Alternate Daily Coating Usage sections of the permit define a method to qualify coatings for use without incorporating them into the permit. Adding the wording "equivalent" convolutes the

APPENDIX D – PROCESSING FEE

PTC Processing Fee Calculation Worksheet

Instructions:

Fill in the following information and answer the following questions with a Y or N. Enter the emissions increases and decreases for each pollutant in the table.

Company: Rule Steel
 Address: 11299 Bass Lane
 City: Caldwell
 State: ID
 Zip Code: 83605
 Facility Contact: Greg Burkhart
 Title: President
 AIRS No.:

N Does this facility qualify for a general permit (i.e. concrete batch plant, hot-mix asphalt plant)? Y/N

Y Did this permit require engineering analysis? Y/N

N Is this a PSD permit Y/N (IDAPA 58.01.01.205.04)

Emissions Inventory			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO _x	3.8	0	3.8
SO ₂	0.1	0	0.1
CO	0.6	0	0.6
PM10	1.0	0	1.0
VOC	40.8	0	40.8
TAPS/HAPS	25.9	0	25.9
Total:	0.0	0	72.3
Fee Due	5,000.00		

Comments: P-2017.0055, Project 61952, Facility 027-00156